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WILDLIFE REVIEW

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WILDLIFE REVIEW

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Except as indicated, abstracts are by Kenneth J. Chiavetta, editor.

NATURAL RESOUCES & CLIMATE

Merriam, Lawrence Campbell, Jr. THE BOB MARSHALL WILDERNESS AREA OF MONTANA, A STUDY IN LAND USE. Ph.D. thesis, Oreg. State Univ. 235 p. 1963. [From Dissertation Abstr. 24(6), 1963.] WR 124: 2

SOILS

Matthews, Earle D., and others. SOIL SURVEY OF SOMERSET COUNTY, MARYLAND. SCS, Soil Survey. ii + 90 p., 22 figs. + single-fold maps based on aerial photos and bound in. July 1966. WR 124: 2
With a section on wildlife.

CONSERVATION EDUCATION

Clement, Roland C. DANGERS OF PESSIMISM IN CONSERVATION. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 378-381. 1966. WR 124: 2
[Natl. Audubon Soc., New York, N.Y.] A warning that theoretical projections are too easily and carelessly turned into predictions, and thus foreclose the future. The author implies that we must change trends that seem unfavorable, instead of submitting to a false determinism which breeds defeatism.--Auth. abstr.

BIBLIOGRAPHIES, DIRECTORIES, BIOGRAPHY, HISTORY

Friedmann, Herbert. IN MEMORIAM: JAMES PAUL CHAPIN. Auk 83(2): 240-252, 1 pl. Apr. 1966. WR 124: 2
[Los Angeles County Museum Nat. Hist., Exposition Park, Los Angeles, Calif.] Includes a listing of published writings of Chapin through period 1904-1964.--Courtesy/ Paul A. Stewart.

PLANTS--GENERAL, ECOLOGY, TECHNIQUES

Gilbert, N., and T. C. E. Wells. ANALYSIS OF QUADRAT DATA. J. Ecol. 54(3): 675-685, 2 figs. Nov. 1966. WR 124: 2
[CSIRO, P.O. Box 109, Canberra City, Australia.] Four methods of analyzing plant quadrat data were tested on the extensive data of Thomas (1960, 1963). [See WR 100: 29 and WR 111: 15.]

PLANTS--FLORAS, COMMUNITIES, TAXONOMY

Grelen, Harold E., and Vinson L. Duvall. COMMON PLANTS OF LONGLEAF PINE-BLUESTEM RANGE. USDA, US Forest Serv. Res. Pap. SO-23. 96 p., illus. 1966. WR 124: 2
Descriptions and botanical drawings of more than 80 understory species, with notes on values for cattle and wildlife.

Pohl, Richard W. THE GRASSES OF IOWA. Iowa State J. Sci. 40(4): 341-566, 174 figs. 15 May 1966. WR 124: 2
A total of 71 genera containing 199 spp. and named hybrids are found in the state.

WILDLIFE--BIOTAS, ECOLOGY, NATURAL HISTORY

Aschoff, Jürgen. CIRCADIAN ACTIVITY PATTERN WITH TWO PEAKS. Ecology 47(4): 657-662, 5 figs. Summer 1966. WR 124: 3
[Max-Planck-Inst. Verhaltensphysiol., 8131 Erling-Andechs, Germany.] The 24-hr. rhythms of behavior and other physiological functions are based upon an endogenous self-sustained oscillation.--From abstr. Courtesy/ Paul A. Stewart.

Horn, Henry S. MEASUREMENT OF "OVERLAP" IN COMPARATIVE ECOLOGICAL STUDIES. Am. Nat. 100(914): 419-424. Sept.-Oct. 1966. WR 124: 3
[Princeton Univ., Princeton, N.J.] Summary: Objective, empirical measures of overlap between samples of items distributed proportionally into various qualitative categories are presented and reviewed. These indices of overlap, derived from either probability or information theory, should prove useful to the ecologist in comparative studies of diet, habitat preference, seasonal patterns of abundance, faunal lists, or similar data.

WILDLIFE--EFFECTS OF CHEMICALS, WEATHER, CARS, ETC.

Ames, Peter L. DDT RESIDUES IN THE EGGS OF THE OSPREY IN THE NORTH-EASTERN UNITED STATES AND THEIR RELATION TO NESTING SUCCESS. J. Appl. Ecol. 3(Suppl.): 87-97, 1 fig. June 1966. With French and German summ. WR 124: 3
[Univ. Calif., Berkeley.] Summary: The osprey (Pandion haliaëtus) population in coastal Connecticut has been declining for 9 years by 30% annually, due to embryonic death before hatching (0.40-0.54 eggs hatch per nest). Hatchability and egg pesticide values were compared with those of an apparently stable colony in Chesapeake Bay, Maryland (1.3-1.6 eggs hatch per nest). Osprey populations in Maine, Massachusetts, Rhode Island and New York are also declining. DDT residues found were 350 micrograms per egg (5.1 micrograms/ml) in Connecticut, 205 micrograms per egg (3.0 micrograms/ml) in Maryland. Total DDT residues in fish from Connecticut nests were 5-10 times higher than in Maryland. A laboratory study of Japanese quail showed that 10 and 50 ppm DDE and DDT in the diet rapidly produced residues in the eggs. In the few analyses so far completed, 50 ppm DDE caused linear increase to 60 micrograms/ml after 60 days. Fifty ppm DDD caused a stable level of 3.5 micrograms/ml in the eggs. These studies are continuing.

Bernard, Richard F. DDT RESIDUES IN AVIAN TISSUES. J. Appl. Ecol. 3 (Suppl.): 193-198. June 1966. With French and German summ. WR 124: 3
[Wis. State Univ., Madison.] Summary: The effects of insecticides on wildlife cannot be assessed until we know the significance of residues recovered from tissues of suspected victims. Birds poisoned experimentally with DDT develop tremors comparable to those found in field specimens. The amounts of DDT found in tissues are generally proportional to severity of exposure. House sparrows (Passer domesticus) which died of acute or chronic poisoning contained much higher concentrations of DDT than birds killed before receiving lethal amounts. Birds with tremors from DDT-treated areas contained amounts of DDT similar to those found in laboratory poisoned birds. Liver, heart, fat and kidney frequently contained less DDT in sparrows with tremors than in killed birds fed sublethal quantities. Similar comparative analyses of brain and breast muscles, however, showed that the insecticide residues in these tissues are closely related to mortality. DDT stored passively in fat deposits is released to more sensitive tissues following periods of starvation and can cause death.

Bjärvall, A. [AN INVESTIGATION OF THE INFLUENCE OF PESTICIDES ON THE BREEDING RESULTS OF BIRDS AT JÄRVAFÄLTET, N. STOCKHOLM.] Vår Fågelvärld 24: 1-11. 1965. [From Ibis 108(2), 1966. In Swedish with English summ.] WR 124: 3

Davis, B. N. K. SOIL ANIMALS AS VECTORS OF ORGANOCHLORINE INSECTICIDES FOR GROUND-FEEDING BIRDS. J. Appl. Ecol. 3(Suppl.): 133-139, 1 fig. June 1966. With French and German summ. WR 124: 4

[Monks Wood Exptl. Sta., Abbots Ripton, Huntingdon, England.] Summary: Ground-feeding species of birds have commonly been found to contain a variety of organochlorine insecticide residues and soil invertebrates are suggested as an important source of these pesticides. A brief description is given of a current study on the seasonal occurrence of arthropods, worms and slugs on the soil surface in a variety of crops receiving organochlorine insecticide treatments. Examples of residues which have been found in such groups by various authors are cited. Feeding behaviour in birds and factors rendering invertebrates especially available to birds in field conditions are discussed with reference to occasions when there may be particular risks of picking up pesticide residues.

DeWitt, James B. METHODOLOGY FOR DETERMINING TOXICITY OF PESTICIDES TO WILD VERTEBRATES. J. Appl. Ecol. 3(Suppl.): 275-278. June 1966. With French and German summ. WR 124: 4

[Patuxent Wildl. Res. Center, Laurel, Md.] Summary: The effects of pesticidal contamination of wildlife habitats may be expected to be proportional to the toxicity of the compounds, the rate and manner of application, persistence of the basic chemical and/or any toxic metabolites, and the extent to which these substances are stored in animal tissues or concentrated by successive elements of wildlife food chains. Measurement of these effects under field conditions is difficult, but the need for field studies may be reduced or eliminated by controlled laboratory tests. Representatives of the birds, mammals and aquatic animals in treated areas should be examined at all stages in the life cycle. Suitable species include laboratory rats, rabbits, dogs, bobwhite or coturnix quail, ringneck pheasant, trout, sunfish, oysters. The quantity of pesticide (ppm in diet or environment; mg/kg consumed) should be determined which produces acute or chronic poisoning or which shows measurable sublethal effects on growth or reproduction. Tissues (including gonads and eggs) should be analysed at each degree of exposure.

Fowle, C. D. THE EFFECTS OF PHOSPHAMIDON ON BIRDS IN NEW BRUNSWICK FORESTS. J. Appl. Ecol. 3(Suppl.): 169-170. June 1966. With French and German summ. WR 124: 4

[Canadian Wildl. Serv., Toronto, Ontario, Canada.] Abstract only.

Genderen, H. van. TOLERANCES FOR TISSUE LEVELS OF PESTICIDES IN WILD ANIMALS; A PROPOSAL FOR CONSIDERATION. J. Appl. Ecol. 3(Suppl.): 271-273. June 1966. With French and German summ. WR 124: 4

[Univ. Utrecht, Netherlands.]

George, John L. THE WORK OF THE IUCN'S COMMITTEE ON THE ECOLOGICAL EFFECTS OF CHEMICAL CONTROLS. J. Appl. Ecol. 3(Suppl.): 287-290. June 1966. With French and German summ. WR 124: 4

[Pa. State Univ., University Park.] Summary: The IUCN has set up a Committee on the Ecological Effects of Chemical Controls. Its function is to keep a continuing survey, internationally co-ordinated, of the ecological effects of pesticides: effects caused by drastic changes in populations, sublethal changes, accumulation of persistent chemicals, etc. The work of the Committee to date is summarized in this paper, the work of some of the members within their own countries is indicated, and the future usefulness of the Committee for pooling information and sponsoring international co-operation in research is suggested.

George, J. L., and D. E. H. Frear. PESTICIDES IN THE ANTARCTIC. J. Appl. Ecol. 3(Suppl.): 155-167. June 1966. With French and German summ. WR 124: 5

[Pa. State Univ., University Park.] Summary: The Antarctic was investigated for the presence of pesticides. Samples of snow 'soils', fauna and flora were collected with the help of the National Science Foundation. Measurements able to detect 0.0005 ppm in water, 0.005 ppm in animal tissues, detected no residues in fifteen snow samples nor in seven samples of invertebrates from four phyla. Residues were found in vertebrates: only in one of eight samples of three fish species and none in one emperor penguin, but four of sixteen Adèlie penguins, four of sixteen Weddell seals and fifteen of sixteen skuas contained residues in one or more tissues. Maximum residues in ppm wet weight were: 0.44 DDT in the fish Rhigophila, 0.18 DDT in Adèlie penguins, 0.15 DDT in Weddell seals and 2.8 DDE in skuas. Pesticides, therefore, occur in the Antarctic, thousands of kilometres from the nearest point of use. The residues are much higher in the fatty tissues of vertebrate predators than in the general environment. The method of transport has not been demonstrated with certainty, nor have the trends in residue levels in time and/or geographical gradients been determined.

Grolleau, G., and F. Biaddi. NOTE ON THE EFFECTS OF THIRAM ON THE LAYING AND REARING OF THE RED-LEGGED PARTRIDGE (ALECTORIS RUFA). J. Appl. Ecol. 3 (Suppl.): 249-251. June 1966. With French and German summ. WR 124: 5

[Centre Natl. Recherches Zootechniques, Jouy en Josas (S.-et-O.), France.] Summary: As various authors had reported the effect of thiram on egg laying in the domestic fowl, turkey and pheasant, we investigated the effect on the laying and hatching of red-legged partridges of eating corn treated with thiram. A group of nine pairs of red-legged partridges was fed for 3 weeks on corn containing 100 ppm of thiram. Egg laying decreased 30% compared with controls. The eggs were incubated, and hatching decreased more than 60% compared with controls.

Grolleau, G., and J. Giban. TOXICITY OF SEED DRESSINGS TO GAME BIRDS AND THEORETICAL RISKS OF POISONING. J. Appl. Ecol. 3(Suppl.): 199-212, 11 figs. June 1966. With French and German summ. WR 124: 5

[Centre Natl. Recherches Zootechniques, Jouy en Josas (S.-et-O.), France.] Summary: The lethal doses of pesticides used in seed dressings (four synthetic insecticides and six fungicides) were determined, using bantams, partridges, red-legged partridges and pheasants (about 1325 birds). The LD_0 and LD_{100} for single ingestions of these substances are indicated graphically. Toxicity depends upon the substance and the species. The order of increasing sensitivity of species is: bantam, pheasant, partridge, red-legged partridge. The decreasing order of toxicity of pesticides is: (insecticides) aldrin, dieldrin, heptachlor, lindane; (fungicides) methylmercury dicyandiamide, methoxyethylmercury silicate, phenyl mercury acetate, copper dimethyldithiocarbamate, copper-8-quinolinate, thiram. The LD_0 and LD_{100} were also determined for three successive daily ingestions of the pesticides, which showed variable cumulative toxicity. A theoretical formula was evolved to measure the risk to the different species from treated corn and the results indicated graphically. Repeated ingestion raises the risk of mortality. This rise is greatest with aldrin, less with heptachlor, particularly small with lindane, and negligible with the mercury and copper fungicides.

Hickey, Joseph J., J. A. Keith, and Francis B. Coon. AN EXPLORATION OF PESTICIDES IN A LAKE MICHIGAN ECOSYSTEM. J. Appl. Ecol. 3(Suppl.): 141-154. June 1966. With French and German summ. WR 124: 5

[Univ. Wis., Madison.] This preliminary study shows the biological concentration of pesticides previously reported for smaller lakes. In Pontoporeia the concentration factor is about 50 times that of the residue level in mud (DDE increases most), and in fish this factor is increased roughly 10 times more still. Among birds, all of which spend part of their life cycle off Lake Michigan, organochlorine levels were progressively higher in brain, breast and body fat; in old-squaw ducks, ring-billed gulls and herring gulls; and in adult as opposed to younger birds. Body fat averaged 2441 ± 334 ppm of the three compounds in twelve herring gulls collected in June and in a seemingly healthy condition.--From summ.

Hunt, Eldridge G. STUDIES OF PHEASANT-INSECTICIDE RELATIONSHIPS. J. Appl. Ecol. 3(Suppl.): 113-123, 5 figs. June 1966. With French and German summ. WR 124: 6

[Calif. Dept. Fish & Game, Sacramento.] Summary: An account is given of the co-operative study and regulation of pesticide use in California, and in particular of three studies of the effects of organochlorine pesticides on pheasants. A field study was made in 1962 at Richvale in a rice producing area treated annually with DDT. Residues of DDT in the fat of wild pheasants ranged from 0 to 2930 ppm, average 740 ppm. A decreased survival rate was established for the young of females with the larger residues. Planting of DDT treated seed was then prohibited. A state-wide survey (1963) of insecticide residues in pheasants showed less DDT than 10 ppm in 56%, and more DDT than 100 ppm in 15%, of the pheasants collected. Residues in pheasants were concluded not to be a public health hazard. In a recent study, penned pheasants were given diets containing 10, 100 and 500 ppm DDT. The overall effect on reproduction appears (from the first year's results) not to be significant at dietary levels of DDT which can be tolerated by the adults.

Keith, J. A. REPRODUCTION IN A POPULATION OF HERRING GULLS (LARUS ARGENTATUS) CONTAMINATED BY DDT. J. Appl. Ecol. 3(Suppl.): 57-70. June 1966. With French and German summ. WR 124: 6

[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Summary: In Larus argentatus colonies in north-western Lake Michigan, nine apparently alive whole eggs averaged 19 ± 3 wet-weight ppm of DDT, 202 ± 34 DDE, and 6.0 ± 0.9 of TDE. Ten dead eggs tended to have higher concentrations. In 115 nests, 30-35% of the eggs died, an exceptional mortality, which occurred rather evenly throughout embryonic life. Chicks hatching from the surviving eggs had a high, but not an exceptionally high, mortality prior to fledging. Whole carcasses of three chicks that died when 1 week old contained 35-48 wet-weight ppm of DDT, 308-365 of DDE, and 10-16 of TDE. Five healthy chicks in their sixth week averaged these wet-weight ppm of DDT plus DDE plus TDE; 1.9 ± 0.7 in their brains, 7.0 ± 2.1 in breast muscle, and 180 ± 22 in body fat. Overall success in 115 nests was 0.3-0.4 fledged young per adult pair.

Keith, James O. INSECTICIDE CONTAMINATIONS IN WETLAND HABITATS AND THEIR EFFECTS ON FISH-EATING BIRDS. J. Appl. Ecol. 3(Suppl.): 71-85. June 1966. With French and German summ. WR 124: 6

[Bur. Sport Fisheries & Wildl., Davis, Calif.] An unusual mortality of fish-eating birds occurred at the Tule Lake National Wildlife Refuge in California between 1960 and 1962. Over 1100 dead birds of ten species were found during that period. Investigations of the mortality indicated that birds died as a result of their exposure to toxaphene, which was applied to adjoining agricultural areas, transported to the refuge in waste irrigation water, and accumulated in fish eaten by the birds. Toxaphene was used in agriculture for only 3 years, 1958-60, and by 1962 residues were no longer found in the marsh habitat. However, results also showed that a potentially hazardous contamination of DDT and its metabolites was present in the birds and the environment. Studies were, therefore, continued to determine the food-chain relationships of DDT in marsh ecosystems, and the effects of the insecticide on birds. Studies of the movements, exposure to pesticides, productivity, and longevity of individuals in three nesting colonies of white pelicans were begun in 1962 to depict the relationships of pesticides to a migratory population of birds dependent upon wetland habitats. To date there is no evidence that the exposure of pelicans to DDT is influencing the population dynamics of the birds.--From abstr.

Keith, James O., and Eldridge G. Hunt. LEVELS OF INSECTICIDE RESIDUES IN FISH AND WILDLIFE IN CALIFORNIA. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 150-177. 1966. WR 124: 7

[Bur. Sport Fisheries & Wildl., Box C, Davis, Calif.] Reports and discusses the results of analyses for insecticides in over 1200 samples, including tissues from 86 species of fish and wildlife, and various substrates from the animals' environments. Insecticides persisted longer on some substrates than on others and accumulated in certain environmental components. Animals associated, especially through food-chain relationships, with contaminated components accumulated greatest residues. Animals dependent upon aquatic habitats were subjected to greater continuous exposure to insecticides than terrestrial species. In general, species predaceous on other animal forms had higher residues than herbivores, but exceptions occurred. Diving ducks, fish-eating birds and shorebirds commonly contained 20 to 50 parts per million of insecticides in flesh and organs. Fat of ring-necked pheasants contained higher residues (up to 2768 ppm) than any other material analyzed. Residues in animal tissues can not yet be used with confidence to diagnose either the intensity of exposure or the effects of insecticides on wild animals.--James O. Keith.

Klingeren, B. van, J. H. Koeman, and J. L. van Haaften. A STUDY ON THE HARE (LEPUS EUROPEUS) IN RELATION TO THE USE OF PESTICIDES IN A POLDER IN THE NETHERLANDS. J. Appl. Ecol. 3(Suppl.): 125-131. June 1966. With French and German summ. WR 124: 7

[Inst. Vet. Pharmacol., Utrecht, Netherlands.] Summary: In the polder South-East Flevoland (c. 54000 ha) regular aerial sprayings have been carried out with dieldrin, DDT and to a lesser extent with endosulfan, principally to protect cole-rape seed. About 5 months after spraying of dieldrin in 1964 and immediately after spraying in the spring of 1965 hares were shot, and, in addition, hares which had been found dead were sent to the laboratory. Samples of blood, liver, muscle, brain and fatty tissues were analysed to get information about storage and distribution of the insecticides. In 1965 a large number of animals were found dead immediately after spraying, residue levels being correspondingly high. Hares shot several months after spraying in 1965 contained lower levels of residues.

Koeman, J. H., and H. van Genderen. SOME PRELIMINARY NOTES ON RESIDUES OF CHLORINATED HYDROCARBON INSECTICIDES IN BIRDS AND MAMMALS IN THE NETHERLANDS. J. Appl. Ecol. 3(Suppl.): 99-106. June 1966. With French and German summ. WR 124: 7

[Univ. Utrecht, Netherlands.] Summary: The results of this study show that birds of prey and fish eating birds in the Netherlands have accumulated large amounts of different chlorinated hydrocarbon insecticides. In some cases (buzzard, barn owl) the death of the animal or its bad condition was probably due to the insecticides, in other cases the tissue levels were high enough to consider these animals to be in danger from poisoning. It seems likely that environmental contamination by these insecticides in coastal habitats has contributed among other factors to the decline in population density of spoonbills and terns.

Moore, N. W. A PESTICIDE MONITORING SYSTEM WITH SPECIAL REFERENCE TO THE SELECTION OF INDICATOR SPECIES. J. Appl. Ecol. 3(Suppl.): 261-269. June 1966. With French and German summ. WR 124: 7

[Monks Wood Expt. Sta., Abbots Ripton, Huntingdon, England.] Summary: Measures of changes in environmental contamination by persistent pesticides are required to assess their effects on wildlife and to check the efficiency of control measures. Indicator species for pesticide monitoring should be widely distributed, abundant and easy to collect. Animals should be large enough for chemical analysis, and if possible of known age. For monitoring local conditions they must be as sedentary as possible. Species whose present residue levels lie between the limit of detection and levels which indicate toxicological significance are preferable. Permanent sampling sites should be chosen

subjectively. A reconnaissance to discover suitable indicator species in Britain is described. It is suggested that the eggs of seabirds should be used for measuring changes in general contamination and that the northern pike (Esox lucius) and eel (Anguilla anguilla) may be suitable for studying local changes. The selection of species for an international monitoring system are discussed. Proposals for establishing a rudimentary international monitoring system are suggested.

Mulla, Mir S. VECTOR CONTROL TECHNOLOGY AND ITS RELATIONSHIP TO THE ENVIRONMENT AND WILDLIFE. J. Appl. Ecol. 3(Suppl.): 21-28. June 1966. With French and German summ. WR 124: 8

[Univ. Calif., Riverside.] Summary: Various pesticides are used to control arthropod vectors of human and veterinary diseases. Examples of programmes in U.S.A., Africa and Asia are given. In the United States, pesticides are widely used for vector control. The relationships of some of these vector control programmes to non-target organisms have been studied on a limited scale: e.g., the acute toxicity of many mosquito larvicides to the mosquito fish Gambusia affinis, dytiscids, hydrophylids, Bufo boreas, Rana catesbeiana and other non-target organisms. The effects on mallard ducks of a few highly effective mosquito larvicides are discussed, in feeding trials as well as in field and semi-field conditions. Some data are presented from the current study of residues and biological effects of parathion applied to duck marshes, at normal and exaggerated rates.

Otterlind, G., and I. Lennerstedt. [AVIFAUNA AND PESTICIDES IN SWEDEN.] Vår Fågelvärld 23: 363-415. 1964. [From Ibis 108(2), 1966. In Swedish with English summ.] WR 124: 8

Peterle, Tony J. THE USE OF ISOTOPES TO STUDY PESTICIDE TRANSLOCATION IN NATURAL ENVIRONMENTS. J. Appl. Ecol. 3(Suppl.): 181-191. June 1966. With French and German summ. WR 124: 8

[Ohio State Univ., Columbus.] Summary: Tracer techniques are useful in studying the translocation and bioaccumulation of pesticides in natural environments. Sophistication of radioassay systems requires a relatively high initial cost for equipment but savings in personnel costs should more than offset these investments over a period of time. Satisfactory, labelled pesticidal compounds are available commercially at reasonable cost. Neutron activation analysis, autoradiography, and isotope dilution methods are also potential techniques for studying pesticide residues. Parallel development of techniques for studying radioactive fallout products in natural systems is discussed. Experimental data from two field experiments involving malathion S-35 and DDT cl-36 are presented as examples of the isotope tracer technique. Preliminary estimates of standard deviations and coefficients of variation suggest a relative constancy of variability for biological specimens.

Prestt, Ian. STUDIES OF RECENT CHANGES IN THE STATUS OF SOME BIRDS OF PREY AND FISH-FEEDING BIRDS IN BRITAIN. J. Appl. Ecol. 3(Suppl.): 107-112. June 1966. With French and German summ. WR 124: 8

[Monks Wood Expt1. Sta., Abbots Ripton, Huntingdon, England.] Studies of possible effects of pesticides on populations of wild vertebrates in Britain have principally been confined to the birds of prey, the heron and the great crested grebe. These were selected after analyses showed they contained higher residues of certain persistent organochlorine pesticides than omnivorous or herbivorous species.--From summ.

Przygodda, Wilfried. METHODS OF STUDYING THE EFFECTS OF PESTICIDES ON BIRDS FOR WORKERS WHO HAVE NO FACILITIES FOR CHEMICAL ANALYSIS AND BIOLOGICAL TESTS. J. Appl. Ecol. 3(Suppl.): 173-179. June 1966. With French and German summ. WR 124: 9

[Staatliche Vogelschutzwarte des Landes Nordrhein-Westfalen, Essen, Germany.] Summary: Several techniques for discovering the effects of pesticides on birds are available to those who have not the resources for chemical analysis of residues and biological tests. In the field, severe losses can be established by counts before and after pesticide applications. Better results come from examination of broods in nestboxes. Nestlings suffer more than adult birds from pesticides, and nestlings in the open suffer more than those in holes. When numerous birds die immediately after spraying, the deaths can safely be attributed to the pesticides. Young birds leaving the nest apparently healthy may have been harmed by weight loss, which can be ascertained. Another test for injury is recording of the feeding frequency, either by direct observation or by means of an 'aktograph'. Laboratory tests feeding treated food to adult birds and nestlings constitute the most precise method of determining the effect of pesticides on birds. The relative toxicity of various preparations can be ascertained by finding their LD_{50} values.

Schneider, F. SOME PESTICIDE-WILDLIFE PROBLEMS IN SWITZERLAND. J. Appl. Ecol. 3(Suppl.): 15-20. June 1966. With French and German summ. WR 124: 9

[Federal Res. Sta. Wädenswil, Zurich, Switzerland.] In Switzerland the alpine region and the forests are generally spared from poisoning. Pesticides (and their agricultural use) must be tested and approved by Federal Research Stations, and the effect on wildlife is one criterion affecting recommendations. In 1963, 1049 ha of larch forest were experimentally treated with phosphamidon-Ciba (1000 g/ha), causing many bird deaths. Contemporary treatment of 707 ha with DDT (1250 g/ha) had no noticeable effect on bird life. Control of voles with endrin requires special permission and is restricted to closely fenced orchards. Observations are reported on seed dressings poisoning birds, poisoning of flower-visiting insects, and integrated pest control.--From summ.

Stickel, L. F., N. J. Chura, P. A. Stewart, C. M. Menzie, R. M. Prouty, and W. L. Reichel. BALD EAGLE PESTICIDE RELATIONS. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 190-204, 1 fig. 1966. WR 124: 9

[Patuxent Wildl. Res. Center, Laurel, Md.] This paper summarizes studies of the Bureau of Sport Fisheries and Wildlife on the effects of pesticides on bald eagles. Experimental investigations of toxicity and metabolism were made in Alaska in the winters of 1961-62 and 1962-63. Residue analyses were undertaken on a continuing basis. The toxicity tests showed no unusual susceptibility of eagles to DDT mortality. The metabolism studies showed that DDT content of tissues increased slowly while DDT was being ingested and declined slowly when DDT dosage was discontinued, with a pattern and rates similar to those of other animals. Continuous intake of DDT at the rate of 5 ppm (dry weight) in the food appeared unlikely to produce lethal amounts in the tissues. Analyses of field-collected eagles showed that exposure of eagles to DDT and dieldrin is nationwide, that at least an occasional eagle obtains enough dieldrin and possibly enough DDT to place him in hazard, but that these chemicals are not the source of any major portion of the mortality of grown eagles. The important question of sublethal effects on behavior, particularly parental behavior, cannot yet be answered.--L. F. Stickel.

Turtle, E. E. ASSESSING LIKELY RISKS TO WILDLIFE FROM NEW USES OF PESTICIDES: THE POSITION UNDER THE PESTICIDES SAFETY SCHEME IN THE UNITED KINGDOM. J. Appl. Ecol. 3(Suppl.): 283-285. June 1966. With French and German summ. WR 124: 9

[Ministry Agr., Fisheries & Food, Tolworth, Surrey, England.]

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Walker, C. H. SOME CHEMICAL ASPECTS OF RESIDUE STUDIES WITH DDT. J. Appl. Ecol. 3(Suppl.): 213-222. June 1966. With French and German summ. WR 124: 10

[Monks Wood Exptl. Sta., Abbots Ripton, Huntingdon, England.] Summary: DDT residues were found to be of widespread occurrence in the tissues of British wild birds, and work was initiated to study their dissemination in the field and their significance in birds. As part of this experimental programme DDT residues were determined in birds, invertebrates, plants and soils by gas-liquid chromatography, employing paper and thin-layer chromatography as confirmatory techniques. Preliminary results are presented, from a field study at Cannock Chase, from toxicological studies with Bengalese finches (Lonchura striata), from incubation studies with avian liver, and from a feeding trial with snails (Helix aspersa). Evidence is given for the post-mortem conversion of pp'-DDT to pp'-TDE in avian liver and the general problem of DDT metabolites in avian toxicological studies is discussed in the light of the data presented.

Way, M. J. THE NATURAL ENVIRONMENT AND INTEGRATED METHODS OF PEST CONTROL. J. Appl. Ecol. 3(Suppl.): 29-32. June 1966. With French and German summ. WR 124: 10

[Imperial Coll. Field Sta., Silwood Park, Sunninghill, Ascot, Berkshire, England.] Summary: Chemical methods of pest control have various harmful side effects, including harm to wildlife. 'Integrated control' is recommended, i.e. complementary use of natural enemies and selective chemicals to control pest species. The natural (non-crop) environment affects the populations of pest species and is affected by pest control practices. Fully developed integrated control practices will involve manipulation of the non-crop environment. The evidence that uncultivated land, hedges, etc., provides reservoirs for pests indicates that diversity in its present form is not necessarily desirable in intensively cultivated areas of Britain.

WILDLIFE--PARASITES & DISEASES

Parker, Richard L. DAMAGING DISEASES INVOLVING WILDLIFE. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 226-231. 1966. WR 124: 10

[CDC Activities, Public Health Serv., Luther Bldg., El Paso, Texas.] Wildlife diseases may be damaging to the interest of wildlife management, livestock and pet owners, or individuals who may contract such a disease directly. Some diseases of wild animals are transmissible only to animals of the same species, some are transmissible to domestic animals or man. The epidemiology of these diseases is best known in domestic animals and man, often the cycle of disease in wildlife is not fully understood. Through epidemiologic studies the most vulnerable point in a disease cycle may be identified and attacked. In some instances consideration must be given to means of preventing the spread of infection rather than eliminating the source of infection. Rabies, a disease most prevalent in wild species, is of major concern to public health officials and to livestock interests. Management of populations of wild carnivores to reduce the rabies potential has had some success. With almost the entire nation involved in the current wildlife rabies problem, population management by reduction techniques alone is beyond available resources. Because of the interest in diseases of wildlife which involve man and domestic animals, the possibility of mutual interest studies with the wildlife profession is great. This interest may provide resources not usually available to wildlife agencies.--Auth. abstr.

Wallace, L. J., F. H. White, and H. L. Gore. ISOLATION OF EDWARDSIELLA TARDA FROM A SEA LION AND TWO ALLIGATORS. J. Am. Vet. Med. Assoc. 149(7): 881-883. 1 Oct. 1966. WR 124: 10

[Univ. Fla., Gainesville.]

WILDLIFE--BIOMETRICS

Jolicoeur, Pierre, and Pierre Brunel. APPLICATION DU DIAGRAMME HEXAGONAL A L'ÉTUDE DE LA SÉLECTION DE SES PROIES PAR LA MORUE. [APPLICATION OF THE HEXAGONAL DIAGRAM TO THE STUDY OF THE SELECTION OF PREY BY THE COD.] Vie & Milieu 17(1-B): 419-433, 4 figs. 1966. In French with English and German summ. WR 124: 11

[Univ. Montreal, Montreal, Quebec, Canada.] Comparing the prey fauna available in the external environment with the stomach contents of a predator may indicate the "preferences" (in a broad sense) of the latter in its natural environment. Considering three prey species, the composition of stomach contents in percentage number of individual prey as well as that of the external fauna may be represented in ordinary triangular diagrams. The graphical comparison of the two triangular diagrams yields an hexagonal diagram, the coordinates of which are obtained by subtracting the coordinates of one triangular diagram from the corresponding coordinates of the other.--From summ.

WILDLIFE--TECHNIQUES

Hofmann, R. R. FIELD AND LABORATORY METHODS FOR RESEARCH INTO THE ANATOMY OF EAST AFRICAN GAME ANIMALS. East African Wildl. J. 4: 115-138, 17 figs. Aug. 1966. WR 124: 11

[Univ. College, P.O. Box 30197, Nairobi, Kenya.] Summary: Descriptions are given of various methods which have been used in the field and in the laboratory to obtain and investigate specimens for comparative studies of the anatomy of East African game animals. Fixation of the animals via the blood vascular system, if possible, with the animal in a natural standing position, is described. Experiences in this respect are recorded in detail, including the preparation of a standing ostrich with its airsac-system unfolded by pumping air into it during infusion of formalin. Emphasis is laid on saving the maximum amount of material from the minimum number of specimens.

Walker, T. J. DETECTION OF MARINE ORGANISMS (FISH, MAMMALS, BIRDS) BY AN INFRARED MAPPER. In: (Proceedings of the conference on the feasibility of conducting oceanographic explorations from aircraft, manned orbital and lunar laboratories: Oceanography from space, Woods Hole, Mass., 24-28 Aug. 1964) (Woods Hole). p. 321-335, illus. 1965. [From Biol. Abstr. 47(11), 1966.] WR 124: 11

[Scripps Inst. Oceanogr., Univ. Calif., San Diego.]

WILDLIFE--MANAGEMENT & RESEARCH, GENERAL

Barick, Frank B. SMALL WATERSHED DEVELOPMENTS IN NORTH CAROLINA. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 289-296. 1966. WR 124: 11

[N.C. Wildl. Resources Comm., Raleigh.] Reviews concern of North Carolina Wildlife Resources Commission with PL 566 drainage of valuable wetland habitats in eastern part of the state and destroying trout streams in western part of state with impoundments. Provides several examples of swamp destruction and mentions impact on hardwood plywood and furniture industry. Outlines cooperative efforts with personnel of U.S. Soil Conservation Service to develop drainage design modifications for swamp preservation such as diking with ditch spoil, placing pipes with risers through spoil to control swamp water level, using channel blocks and sod waterways, and restricting flow acceleration to channel clearing and snagging. Emphasizes that mitigation should be an integral part of project expense, and federally financed. Indicates that situation appears to be improving but that it merits continued scrutiny.--Auth. abstr.

Cringan, Alexander Thom. SOME FACTORS IN SELECTING UNITS FOR MANAGING WILDLIFE IN ONTARIO. Ph.D. thesis, Univ. Mich. 163 p. 1965. [From Dissertation Abstr. 27(2B), 1966.] WR 124: 12

A system of population-centered regions is judged to be slightly superior to the Forest District system and decidedly superior to three other systems, watersheds, ecological units, and timber management units, for administering wildlife. Revenue from wildlife-based activities in Ontario has grown more rapidly than revenue from timber since 1959. All classes of hunting and angling are expected to continue to grow between 1965 and 1981, while commercial fishing is expected to be stable, and wild fur production to decline. Control of noxious wildlife, and zoonoses, and management of wildlife for aesthetic objectives are expected to increase. Modification of the Forest District system to make it more completely a system of population-centered regions is recommended.

Gilbert, Douglas Lee. PUBLIC RELATIONS AND COMMUNICATIONS IN WILDLIFE MANAGEMENT. Ph.D. thesis, Univ. Mich. 209 p. 1963. [From Dissertation Abstr. 24(4), 1963.] WR 124: 12

Lambrecht, Frank L. SOME PRINCIPLES OF TSETSE CONTROL AND LAND-USE WITH EMPHASIS ON WILDLIFE HUSBANDRY. East African Wildl. J. 4: 89-98, 1 fig. Aug. 1966. WR 124: 12

[Univ. Calif. Med. Center, San Francisco.] It is suggested that serious consideration be given in tsetse-control schemes and land-use plans to the feasibility of game-farming, especially when marginal lands are involved. It would be advantageous in many instances to keep all large and some smaller tracts of marginal lands for wildlife conservation purposes; the large areas as national parks and as a valuable source of government income and prestige, the smaller areas as a permanent animal-protein supply through game-harvesting operations. The advantages of game-farming over domestic livestock-raising are discussed in detail.--From summ.

Morgan, Robert L. WILDLIFE MITIGATION MEASURES IN THE NORTH DAKOTA WATERSHED PROGRAM. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 297-307, 2 figs. 1966. WR 124: 12

[N. Dak. Game & Fish Dept., Bismarck.]

Trautman, C. G., W. L. Tucker, P. F. Springer, and R. L. Drieslein. FOX-PHEASANT RELATIONSHIPS IN SOUTH DAKOTA 1965. I. PHEASANT POPULATION INDICES. II. FOX-PREY RELATIONSHIPS. S. Dak. State Univ. Circ. 176. 28 p. Aug. 1966. WR 124: 12

[S. Dak. Dept. Game, Fish & Parks, Pierre.] Studies were conducted on four pairs of 100-square-mile areas. Fox populations were reduced on one member of each pair beginning in January 1965, and individual foxes were removed on a complaint basis on the other. Each pair of areas is referred to as a unit. A significant (0.01) increase in brood size occurred from 1964 to 1965 in the fox-reduction compared to the check area of Unit 1. A nonsignificant increase occurred in the check area compared to the fox-reduction area in Unit 2. The adult pheasant-per-mile averages during the spring of 1965 showed more birds in the fox-reduction area than in the check area of Unit 1, and the reverse in Unit 2. Neither difference is significant. Units 3 and 4 showed significantly (0.01) more adults per mile in the fox reduction than in the check areas during this same period. Fox data revealed that counting tracks in snow along transects is the best of three methods for determining fox activity in an area. Grasses, mice, pheasants, rabbits, and insects, in descending order, respectively, were the most frequently occurring items found in stomachs of foxes taken in the study areas from January to June 1965.--From summ.

WILDLIFE--HUNTING AREAS & PROBLEMS

McKeon, Warren H., William F. Hollister, and Michael Rodak. PUBLIC HUNTING AS A GAME MANAGEMENT TOOL IN SOUTHEASTERN NEW YORK. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 307-323, 4 figs. 1966. WR 124: 13

[N.Y. State Conserv. Dept., Poughkeepsie.] The Putnam County Cooperative Area has been a guinea pig area for public hunting in an area of high hunting pressure and high land values. The cost of operations has declined annually. The high continuing records of game populations, hunter success and hunter information are the most reliable in the New York Area. As a tool of game and hunter management, it appears to be very well suited to the urban environment in which it is located. Its value in hunter education would appear to be very high as reflected by the low accident rate. Game take per hunter on a seasonal basis is one piece of game per 4.3 hunters. This has varied somewhat from year to year without any noticeable dissatisfaction on the part of the sportsmen. Therefore, a full game bag may not be as important as the recreational value derived from a day afield.--From concl.

WILDLIFE--ECONOMIC & OTHER VALUES

Cummings, Maynard W. PRINCIPLES OF ANIMAL DAMAGE ECONOMICS AND CONTROL. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 235-238. 1966. WR 124: 13

[Univ. Calif., Davis.] Control of animal damage has long been recognized as an essential element in sound wildlife management programs. Animal depredation may be clearly defined as pest activity to managers of land use agencies or industries, but another segment of the public sees primarily the positive values of all wildlife and questions the necessity of some control programs. Animal control programs should consider protective, repellent, biological or other non-lethal methods as well as reductional control. When lethal control is necessary, the methods should be safe, economical, efficient, humane and selective, and be utilized only to the minimum degree necessary to reduce damage to tolerable limits. Vertebrate animal damage problems are of worldwide concern for their impact on total food production.--Auth. abstr.

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL

Berryman, Jack H. THE NEW LOOK IN ANIMAL CONTROL. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 246-258. 1966. WR 124: 13

[Bur. Sport Fisheries & Wildl., Washington, D.C.] The paper covers the recent history of the new Division of Wildlife Services, the successor Division to the Division of Predator and Rodent Control, Bureau of Sport Fisheries and Wildlife, and includes a brief description of the new Division's responsibilities in animal control, wildlife resource enhancement, and pesticides surveillance and monitoring. The paper elaborates on the current philosophy of animal control and the policies which will govern its conduct by the Bureau. In addition to the philosophical implications, the paper briefly outlines a new approach in animal control to achieve four major program goals: (1) public health and safety, (2) improving agricultural production, (3) resource management services, and (4) urban and industrial services. It also describes new approaches to improved manpower utilization, cooperation with other agencies, and a new emphasis on continued education and training.--Auth. abstr.

Hall, E. Raymond. CARNIVORES, SHEEP, AND PUBLIC LANDS. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 239-245. 1966. WR 124: 13

[Univ. Kans., Lawrence.] Predatory mammal control by one subdivision of the Wildlife Services Division of the Bureau of Sport Fisheries and Wildlife of the Fish and Wildlife Service of the U.S. Department of the Interior damages the national wildlife resources. Predator control continues principally because domestic sheep are grazed on federally-owned lands. Fifteen categories of damage are listed as resulting from the seven million sheep grazed on public

lands of the western United States. In order to prevent the damage it is recommended that domestic sheep be excluded from public lands and that the state extension specialist system of predator control be substituted for the existing federal system.--Auth. abstr.

Lewis, James C. THE FOX RABIES CONTROL PROGRAM IN TENNESSEE, 1965-66. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 269-280, 1 fig. 1966. WR 124: 14

[Tenn. Game & Fish Comm., Nashville.] In 1964, Tennessee reported more cases of wildlife rabies than any other state in the United States. An epizootic was in progress in late 1964 and early 1965. Intensive news coverage led to widespread public concern. The only method available to cope with this epizootic was a program to reduce the fox population density. The United States Public Health Service recommended that the control program involve 28,000 square miles east of Kentucky Lake. The estimated cost of the recommended effort was $200,000. Trapping teams were trained by specialists of the Bureau of Sport Fisheries and Wildlife and the United States Department of Public Health. Trapping was conducted in five counties and 191 foxes and 932 other animals captured. Foxes were also hunted, using predator calls, and 59 foxes and 38 other animals killed. Some chemical control was tried in 1965 and 1966. Cost and man days of effort are presented. Future study needs are discussed.--Auth. abstr.

WETLANDS & WILDLIFE

Harter, Robert D. THE EFFECT OF WATER LEVELS ON SOIL CHEMISTRY AND PLANT GROWTH OF THE MAGEE MARSH WILDLIFE AREA. Ohio Game Monographs no. 2. 36 p., 8 figs. July 1966. WR 124: 14

[Conn. Agr. Expt. Sta., New Haven.]

Hawkes, Alfred L. COASTAL WETLANDS--PROBLEMS AND OPPORTUNITIES. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 59-78. 1966. WR 124: 14

[40 Bowen St., Providence, R.I.] The political, legal, engineering, management, economic and legislative problems lending to prevent preservation of coastal wetlands in a natural state are discussed. Easements, tax adjustments, private preservation, semi-public preservation, public ownership, state and local zonation, legislative and administrative fiat, and other measures are suggested as approaches which may serve as temporary or permanent preservation techniques. The author concludes that in the long run, purchase in fee simple by federal and state governments and private preservation organizations will be the only effective method of preservation. Many alternative techniques can serve to hold the line on loss of coastal wetlands until the funds necessary for purchase can be made available over a period of time. Continued educational campaigns to keep public support for such expensive acquisitions at a high level will be necessary to accomplish the recommended objective of preventing any more loss of coastal wetlands.--Auth. abstr. [Also published in Narragansett Naturalist 8(3), 1966.]

Leitch, W. G. HISTORICAL AND ECOLOGICAL FACTORS IN WETLAND INVENTORY. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 88-96. 1966. WR 124: 14

[Ducks Unlimited (Canada), Winnipeg, Manitoba.] The techniques used by Ducks Unlimited (Canada) in making an inventory of the wetlands of prairie Canada are described. Using a modification of the Bach (1951), a rating system was developed which classifies each wetland on the basis of historical, ecological and productivity factors. Since 1954, individual inspections have been made of 1,288 areas in Saskatchewan and summary reports prepared on 15 topographic sheets, 6 watersheds and 2 special areas. In Manitoba, 356 areas were similarly covered and 2 area reports prepared. These data were made available to the appropriate provincial wildlife branches to use as they decide best in the continuing struggle to preserve waterfowl habitat.--Auth. abstr.

Mörzer Bruijns, M. F., and Z. Salverda. SURVEY OF MARSHES AND WETLANDS IN THE NETHERLANDS. Beaufortia (Amsterdam) 13(153): 47-80, illus. 1965. [From Biol. Abstr. 47(14), 1966.] WR 124: 15
[State Inst. Nat. Conserv. Res., Zeist, Netherlands.]

RANGELAND & WILDLIFE

Ferguson, Robert B., and Joseph V. Basile. TOPPING STIMULATES BITTERBRUSH TWIG GROWTH. J. Wildl. Mgmt. 30(4): 839-841, 1 fig. Oct. 1966. WR 124: 15
[Intermountain Forest & Range Expt. Sta., Boise, Idaho.] Abstract: The response of old bitterbrush (Purshia tridentata) shrubs to topping was studied on winter range for deer in southwestern Idaho. Tops of 15 randomly selected shrubs at least 6 ft tall were cut off 3 ft above ground level; 15 similar shrubs were selected as a control. Current year's growth was sampled on each shrub before topping and annually thereafter for 4 years. All shrubs produced similar amounts of twig growth the year before treatment. The year after treatment, topped shrubs produced nearly 9 times as much twig growth as the control shrubs. In subsequent years, topped shrubs outproduced control shrubs but at a declining rate. Topping old shrubs may be a useful, though perhaps temporary, way to increase production of bitterbrush browse.

Furniss, Malcolm M. LOOPERS INVADE DEER BROWSE. Idaho Wildl. Rev. 19(2): 8-9, illus. Sept.-Oct. 1966. WR 124: 15
Major topics are seasonal history, causes of death, and damage by larvae of Anacamptodes clivinaria to mountain mahogany. "A survey in June 1965, after three [annual] defoliations showed that nearly half of the trees were completely dead. Many others had some of their branches killed and may eventually die."

Heady, H. F. INFLUENCE OF GRAZING ON THE COMPOSITION OF THEMEDA TRIANDRA GRASSLAND, EAST AFRICA. J. Ecol. 54(3): 705-727, 5 figs. Nov. 1966. WR 124: 15
[Univ. Calif., Berkeley.] While there is suggestion in the data that various animal species influence the grassland in different ways, the most striking correlations of vegetational changes were with intensity of grazing rather than kind of grazing animal. In other words, concentrations of wild animals result in overgrazing and deterioration of the grasslands just as does overgrazing by domestic animals. This conclusion is not new but it emphasizes again the need for proper management of all animals.--From summ.

Neff, Don Johnson. THE EFFECTS OF CLIPPING ON THE VIGOR OF BIG GAME BROWSE PLANTS AND RELATED STUDIES IN THE ARIZONA CHAPARRAL. Ph.D. thesis, Oreg. State Univ. 128 p. 1963. [From Dissertation Abstr. 24(8), 1964.] WR 124: 15

FORESTLAND--FORESTRY & ECOLOGY

Hodgdon, Kenneth W. WILDLIFE AND HUNTING ON COMMERCIAL FORESTS IN MAINE. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 280-288, 1 fig. 1966. WR 124: 15
[Dept. Inland Fisheries & Game, Augusta, Maine.] In Maine, where deer hunting contributes several million dollars annually to the economy, more work and experiments are concerned with a possible improvement in the carrying capacity of the land for deer. Since practically all of the nearly 17,000,000 acres of woodlands in Maine are privately owned, both hunting and habitat improvement must be through the cooperation of the landowners. Maine's climate dictates that most winters constitute a bottleneck in the carrying capacity for deer, especially in the northern half of the State. In this area, land ownership is in large blocks and agreements with most of these large landowners have been executed, enabling the Department to conduct management practices there. Two types of deeryard management are in use, depending upon terrain. The contribution by the timber companies in the acreage and volume of merchantable wood left standing for the benefit of deer is substantial, and the acceptance of this program by sportsmen is good.--Auth. abstr.

Smith, Robert Leo. WILDLIFE AND FOREST PROBLEMS IN APPALACHIA. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 212-226. 1966. WR 124: 16
[W. Va. Univ., Morgantown.] The region once held an abundance of wildlife and the finest hardwood timber in eastern North America. Today wildlife is scarce, chiefly because of subsistence hunting and a high feral dog population. Streams are polluted by acid mine drainage, coal wastes, and silt. The forests are second- and third-growth stands, culled by loggers and scarred by repeated fires, largely incendiary in origin. Yet in spite of this, the region represents one of the finest potential hardwood forest areas in the continent and one of the best habitats for forest wildlife.--From summ.

FORESTLAND--MANAGEMENT FOR & DAMAGE BY WILDLIFE

Ahlgren, Clifford E. SMALL MAMMALS AND REFORESTATION FOLLOWING PRESCRIBED BURNING. J. Forestry 64(9): 614-618, 3 figs. Sept. 1966. WR 124: 16
[Quetico-Superior Wilderness Res. Center, Ely, Minn.] Abstract: Changes in populations of small mammals were investigated on four jack pine tracts in northeastern Minnesota. One tract was left uncut, one was cut with slash evenly distributed, and two were cut and subjected to controlled burning. North American census trapping methods were used in July and October for three consecutive years. Populations of deer mice (Peromyscus maniculatus) were significantly higher on burned tracts than on unburned tracts the first and third post-fire years. This increase was related to the supply of seed released by burned jack pine and also other seed exposed in the upper layers of soil, as well as to cover conditions. Since burning created habitat and food conditions favorable to the increase of seed eating mouse species they must be taken into consideration in post-fire reforestation.

Eiberle, K. [OBSERVATIONS ON BROWSING OF THE NORWAY SPRUCE.] Schweiz. Z. Forstwesen 116(10/11): 816-824. Oct.-Nov. 1965. [From Bibliog. Agr. 30(5), 1966. In German with French summ.] WR 124: 16

Flerov, B. F. [FORECASTING MASS FOREST DAMAGE.] Leningrad Nauch.-Issled. Inst. Lesnogo Khoz. Sb. Rabot Les. Khoz. 8: 273-279. 1964. [From Bibliog. Agr. 30(8), 1966. In Russian.] WR 124: 16
"In taiga zone."

Gilchrist, B. THE CONTROL OF GAME IN FOREST AREAS. East African Agr. Forest. J. 30(4): 381-389. Apr. 1965. [From Bibliog. Agr. 30(5), 1966.] WR 124: 16
Forest policy; chiefly damage caused by game in Tanganyika.

Hasek, J. [NIBBLING AND SCRATCHING OF STANDING TREES BY WILDLIFE AS A SERIOUS PROBLEM OF THE MODERN FOREST PROTECTION.] Brno. Vysoka Sk. Zemedel. Sb. Rada C, Spisy Fak. Les. 2: 93-110. 1965. [From Bibliog. Agr. 30(5), 1966. In Czech with English summ.] WR 124: 16

Lay, Daniel W. FOREST CLEARINGS FOR BROWSE AND FRUIT PLANTINGS. J. Forestry 64(10): 680-683. Oct. 1966. WR 124: 16
[Texas Parks & Wildl. Dept., Nacogdoches.] Abstract: Plantings on open site of yaupon seedlings produced 1,580 pounds of browse and 200 pounds per acre of fruit in the fourth year. This was the equivalent of 166 acres of production from yaupon planted under pines with cattle and 57 acres of ungrazed pine range. Dwarf live oaks produced acorns the third year in the open and none for five years in forest sites. Therefore, any planting of these two species for wildlife should be made in clearings managed for the purpose.

Leggat, G. J. THE RECONCILIATION OF FORESTRY AND GAME PRESERVATION IN WESTERN UGANDA. East African Agr. Forest. J. 30(4): 355-369. Apr. 1965. [From Bibliog. Agr. 30(5), 1966.] WR 124: 16

Ribal, M., and S. Hanus. [NEW REPELLENTS FOR THE PROTECTION OF FOREST TREES FROM WILDLIFE.] Prace Vyzkumn. Ustavu Les. CSSR 31: 181-214. 1965. [From Bibliog. Agr. 30(5), 1966. In Czech with Russian and German summ.] WR 124: 17

Stahl, D. [CHEMICAL PROTECTION AGAINST PEELING DAMAGE.] Allg. Forstz. 21 (13): 226-227. 26 Mar. 1966. [From Bibliog. Agr. 30(8), 1966. In German.] WR 124: 17

CONTROL OF VEGETATION WITH HERBICIDES, ETC.

Arner, Dale H. UTILITY LINE RIGHT-OF-WAY MANAGEMENT. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 259-268. 1966. WR 124: 17

[Miss. State Univ., State College.] Demonstration projects were established cooperatively between Conservation Agencies and Utility Companies in several physiographic areas in the Southeastern U.S. Mechanical equipment and prescribed burning accompanied by fertilizing and seeding, were used in right-of-way maintenance. Cooperative planning resulted in significant reduction in cost of right-of-way maintenance and resulted in an establishment of choice food plants for game animals. Prescribed burning proved to be the most economical technique investigated.--Auth. abstr.

Smith, Donald G. A LITERATURE REVIEW ON FACTORS AFFECTING SHRUB RESPONSE TO HERBICIDES. Colo. Dept. Game, Fish & Parks and Colo. Coop. Wildl. Res. Unit Spec. Rept. no. 5. iv + 15 p. May 1966. $1.00. WR 124: 17

A review of the literature which covers some of the factors affecting shrub response to 2,4-D and 2,4,5-T. It is comprised of three main parts: (I) environmental factors, (II) physiological factors, and (III) phenological factors.--From introduction.

MAMMALS--GENERAL

Haglund, Bertil. DE STORA ROVDJURENS VINTERVANOR. I. [WINTER HABITS OF THE LYNX (LYNX LYNX L.) AND WOLVERINE (GULO GULO L.) AS REVEALED BY TRACKING IN THE SNOW.] Viltrevy 4(3): 81-310, 32 figs. 1966. 20 kronen. In Swedish with long English summ. WR 124: 17

[Box 830, Norrtälje, Sweden.] Detailed study.

Talbot, Lee M. WILD ANIMALS AS A SOURCE OF FOOD. US F&WS, Spec. Sci. Rept.--Wildl. no. 98. iv + 16 p. June 1966. WR 124: 17

"Land managers frequently overlook the fact that the indigenous wild animals, having evolved with the environment, may be far more efficient in utilizing plants and converting them to protein than our few domestic animals. Conditions over much of the land area of the earth because of climate, terrain, diseases, and other factors are unfavorable for the production of domestic livestock, yet in some areas as many as twenty species of wild ungulates thrive. These animals are greatly superior to domestic livestock in terms of biomass, carrying capacity, productivity, live weight gains, use of plant life and resistance to drought, diseases and parasites. Further, there is much evidence that some wild ungulates can be domesticated. The potential for scientific management with resulting great improvement in the economy and general well-being of the people involved is self evident."

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MAMMALS--TECHNIQUES

Harthoorn, A. M. RESTRAINT OF UNDOMESTICATED ANIMALS. J. Am. Vet. Med. Assoc. 149(7): 875-880, 3 figs. 1 Oct. 1966. WR 124: 18
[Univ. Coll., Nairobi, Kenya.] Summary: The capture, by means of chemical immobilization, of about 100 large African animals of 17 different species was accomplished by use of compound M.99, an oripavine with morphine-like activity, but with approximately 1,000 times the activity of morphine. Usually, the compound was used in conjunction with a tranquilizer and scopolamine. The small dose required enabled M.99 to be administered by a projectile syringe of 2-ml. capacity. The effect of the immobilizing compound can be reversed with nalorphine or with compound M.285.

Wallach, J. D. IMMOBILIZATION AND TRANSLOCATION OF THE WHITE (SQUARE-LIPPED) RHINOCEROS. J. Am. Vet. Med. Assoc. 149(7): 871-874. 1 Oct. 1966. WR 124: 18

MAMMALS--FAUNAS & MANUALS

Barlow, Jon Charles. LAND MAMMALS FROM URUGUAY: ECOLOGY AND ZOOGEOGRAPHY. Ph.D. thesis, Univ. Kans. 352 p. 1965. [From Dissertation Abstr. 27(1B), 1966.] WR 124: 18
Although Uruguay bears a superficial resemblance to the pampean district of Argentina, factors of climate, physiography and, to a lesser extent, phyto-geography, indicate a much closer relationship with the subtropical parts of southern Brazil. Sixty-six species of mammals are known or are thought to have occurred in Uruguay in recent times.

Hock, Raymond J., and Victor Cottini. MAMMALS OF THE LITTLE SUSITNA VALLEY, ALASKA. Am. Midland Nat. 76(2): 325-339, 3 figs. Oct. 1966. WR 124: 18
[Northrop Space Labs., Hawthorne, Calif.] Thirty species of mammals (including the caribou, no longer present) are recorded from this small area. Ten other species are known from nearby areas, so the species count may be much larger. The most obvious mammals, the Arctic ground squirrel and hoary marmot, were the objects of special study. Notes on the annual cycle and life history of these latter species are included.--From abstr.

Holliman, Dan Clark. THE MAMMALS OF ALABAMA. Ph.D. thesis, Univ. Ala. 504 p. 1963. [From Dissertation Abstr. 24(11), 1964.] WR 124: 18
Eighty-six species and subspecies of 45 genera, 20 families and 8 orders of mammals are recorded.

Jones, T. S. NOTES ON THE COMMONER SIERRA LEONE MAMMALS. Nigerian Field 31(1): 4-17. Jan. 1966. [From J. Mammal. 47(4), 1966.] WR 124: 18

Kirkpatrick, Ralph D. MAMMALS OF JOHNSTON ATOLL. J. Mammal. 47(4): 728-729. Nov. 1966. WR 124: 18
[Ind. Univ. Southeastern Campus, Jeffersonville.] "Mid-Pacific Ocean."

Kirkpatrick, Ralph D. MAMMALS OF THE TOKELAU ISLANDS. J. Mammal. 47(4): 701-704. Nov. 1966. WR 124: 18
[Ind. Univ. Southeastern Campus, Jeffersonville.] "Mid-Pacific Ocean."

Medway, Lord. THE MAMMALS. p. 9-32. In: (Observations on the fauna of Pulau Tioman and Pulau Tulai.) Bull. Nat. Mus. Rep. Singapore (34). 158 p. 1966. [From J. Mammal. 47(4), 1966.] WR 124: 18

Saint Girons, M. C., and P. J. H. Van Bree. NOTES SUR LES MAMMIFERES EN PROVENANCE DU DEPARTEMENT DES PYRÉNÉES-ORIENTALES IV.--LISTE PRELIMINAIRE DES MAMMIFERES DU MASSIF DU CARLIT. [NOTES ON THE MAMMALS IN PYRENEES-ORIENTALES. IV. PRELIMINARY LIST OF MAMMALS FROM THE CARLIT MASSIF.] Vie Milieu 15(2): 475-485. 1964. [From Biol. Abstr. 47(14), 1966. In French.] WR 124: 18
[Mus. Nat. Hist., Brunoy, France.]

MAMMALS--POPULATIONS, HOME RANGES, COMMUNITIES

Nikol'skii, G. V. [SOME MODERN PROBLEMS IN THE STUDY OF THE POPULATION DYNAMICS OF ANIMALS.] Zool. Zhur. 44(8): 1131-1138, illus. 1965. [From Biol. Abstr. 47(14), 1966. In Russian with English summ.] WR 124: 19
[Inst. Animal Morphol., Acad. Sci. USSR, Moscow.]

MAMMALS--PARASITES & DISEASES

Bartel, Monroe H. DESCRIPTION AND LIFE CYCLE OF RAILLIETINA (RAILLIETINA) LOEWENI N. SP., A CESTODE OF THE BLACK-TAILED JACK RABBIT (LEPUS CALIFORNICUS MELANOTIS MEARNS) IN WESTERN KANSAS, WITH NOTES ON RAILLIETINA OF NORTH AMERICAN MAMMALS. Ph.D. thesis, Kans. State Univ. 101 p. 1963. [From Dissertation Abstr. 24(9), 1964.] WR 124: 19

Ewing, S. A., and C. M. Hibbs. DRACUNCULUS INSIGNIS (LEIDY, 1858) IN DOGS AND WILD CARNIVORES IN THE GREAT PLAINS. Am. Midland Nat. 76(2): 515-519. Oct. 1966. WR 124: 19
[Coll Vet. Med., Manhattan, Kans.] Hosts: dog, skunk, and raccoon.

Kan, Lai-Bing. PARASITIC INFECTIONS OF MAN AND ANIMALS / A BIBLIOGRAPHY OF ARTICLES IN CHINESE MEDICAL PERIODICALS 1949-64. Hong Kong Univ. Press. xiii + 119 p. 1966. WR 124: 19
Based on 17 Chinese medical periodicals. The 950 entries are arranged by subject.

Kartman, Leo, Martin I. Goldenberg, and William T. Hubbert. RECENT OBSERVATIONS ON THE EPIDEMIOLOGY OF PLAGUE IN THE UNITED STATES. Am. J. Public Health 56(9): 1554-1569, 2 figs. Sept. 1966. WR 124: 19
[Communicable Disease Center, 15th Ave. & Lake St., Bldg. 18, San Francisco, Calif.] In the United States from 1908-1965 there have been 111 human infections contracted from wild rodents and other mammals or their fleas, resulting in 64 deaths. In recent years, human cases of plague, with a history of association with wild rodents, have occurred in New Mexico, Arizona, Colorado, and California.--From summ.

Sachs, R. NOTE ON CYSTICERCOSIS IN GAME ANIMALS OF THE SERENGETI. East African Wildl. J. 4: 152-153. Aug. 1966. WR 124: 19
[Serengeti Res. Inst., P.O. Box 3134, Arusha, Tanzania.]

Thomas, Paul Arthur. GEOGRAPHIC VARIATION IN THE RABBIT TICK, HAEMAPHYSALIS LEPORISPALUSTRIS. Ph.D. thesis, Univ. Kans. 190 p. 1965. [From Dissertation Abstr. 27(1B), 1966.] WR 124: 19

SHREWS, MOLES, BATS

Aellen, V. NOTES SUR TADARIDA TENIOTIS (RAF.) (MAMMALIA, CHIROPTERA)--I. SYSTÉMATIQUE, PALÉONTOLOGIE ET PEUPLEMENT, RÉPARTITION GÉOGRAPHIQUE. [NOTES ON TADARIDA TENIOTIS (RAF.) (MAMMALIA, CHIROPTERA)--I. SYSTEMATIC, PALEONTOLOGIC AND GEOGRAPHIC DISTRIBUTION.] Rev. Suisse Zool. 73(6): 119-159. Apr. 1965. [From J. Mammal. 47(4), 1966. In French.] WR 124: 19

Beck, Albert Joseph. FACTORS AFFECTING THE DENSITY AND OCCURRENCE OF ECTOPARASITES OF BATS. Ph.D. thesis, Univ. Calif. 110 p. 1966. [From Dissertation Abstr. 27(3B), 1966.] WR 124: 19

Brisbin, I. Lehr, Jr. ENERGY-UTILIZATION IN A CAPTIVE HOARY BAT. J. Mammal. 47(4): 719-720. Nov. 1966. WR 124: 19
[Univ. Ga., Athens.]

Davis, Russell Price. HOMING IN BATS. Ph.D. thesis, Univ. Ariz. 142 p. 1963. [From Dissertation Abstr. 24(3), 1963.] WR 124: 20

Davis, Russell. HOMING PERFORMANCE AND HOMING ABILITY IN BATS. Ecol. Monographs 36(3): 201-237, 4 figs. Summer 1966. WR 124: 20
[Univ. Ariz., Tucson.] A useful review on the present status of research on homing in bats.--Courtesy/ Paul A. Stewart.

Dwyer, P. D. OBSERVATIONS ON CHALINOLOBUS DWYERI (CHIROPTERA: VESPERTILIONIDAE) IN AUSTRALIA. J. Mammal. 47(4): 716-718. Nov. 1966. WR 124: 20
[Univ. Queensland, St. Lucia, Brisbane, Australia.] Weights and changes in size and composition of a nursery colony.

Gould, Edwin, and John F. Eisenberg. NOTES ON THE BIOLOGY OF THE TENRECIDAE. J. Mammal. 47(4): 660-686, 8 figs. Nov. 1966. WR 124: 20
[Johns Hopkins Univ., Baltimore, Md.] With comparisons of maturation between four insectivore families.

Hall, John S. BAT HIBERNATION IN THE MAMMOTH CAVE REGION OF KENTUCKY. Bull. Natl. Speleological Soc. 26: 71-72. 1964. [From J. Mammal. 47(4), 1966.] WR 124: 20

Harrison, David L. A NOTE ON THE OCCURRENCE OF SUNDEVALL'S FREE-TAILED BAT, TADARIDA (MOPS) MIDAS SUNDEVALL, 1843 (CHIROPTERA: MOLOSSIDAE) IN BECHUANALAND. Arnoldia 2(30): 1-2. 25 Aug. 1966. WR 124: 20

Herreid, Clyde F., II. BAT LONGEVITY AND METABOLIC RATE. Exptl. Gerontol. 1(1): 1-9. July 1964. [From J. Mammal. 47(4), 1966.] WR 124: 20

Jones, Clyde. CHANGES IN POPULATIONS OF SOME WESTERN BATS. Am. Midland Nat. 76(2): 522-528, 3 figs. Oct. 1966. WR 124: 20
[Tulane Univ., New Orleans, La.] Abstract: Data taken from bats captured in mist nets provide information regarding seasonal and annual fluctuations of populations for a period of eight years, and relative abundance of the 19 species encountered. Seasonal changes in populations of bats are correlated with the availability of water, especially in areas where water is relatively scarce. In addition to predation and the presence of suitable roosting sites and adequate food supplies, it seems that the availability of adequate water and water surfaces for drinking is an important factor influencing distribution and size of populations of bats.

Jones, J. Knox, Jr., and Patrick B. Dunnigan. MOLOSSOPS GREENHALLI AND OTHER BATS FROM GUERRERO AND OAXACA, MEXICO. Trans. Kans. Acad. Sci. 68(3): 461-462. Fall 1965. [From J. Mammal. 47(4), 1966.] WR 124: 20

Jones, J. Knox, Jr., and Hugh H. Genoways. RECORDS OF BATS FROM WESTERN NORTH DAKOTA. Trans. Kans. Acad. Sci. 69(1): 88-90. Spring 1966. [From J. Mammal. 47(4), 1966.] WR 124: 20

Koopman, Karl F. TAXONOMIC AND DISTRIBUTIONAL NOTES ON SOUTHERN AFRICAN BATS. Puku 4: 155-165. 1966. WR 124: 20
[Am. Museum Nat. Hist., New York, N.Y.] Taxonomic and distributional notes are given for southern African Chiroptera of the genera Rousettus, Epomophorus, Rhinolophus, Hipposideros, Cloeotis, Myotis, Pipistrellus, Miniopterus, Tadarida, and Platymops.--From summ.

Kunz, Thomas H. NOTES ON SOME NEBRASKAN BATS. Trans. Kans. Acad. Sci. 68 (1): 201-203. Spring 1965. [From J. Mammal. 47(4), 1966.] WR 124: 20

Mueller, Helmut Charles. HOMING AND DISTANCE-ORIENTATION IN BATS. Ph.D. thesis, Univ. Wis. 142 p. 1963. [From Dissertation Abstr. 23(11), 1963.] WR 124: 20

Perry, Alfred Eugene. POPULATION ANALYSIS OF THE GUANO BAT TADARIDA BRASILIENSIS MEXICANA (SAUSSURE) USING THE LENS-WEIGHT METHOD OF AGE DETERMINATION. Ph.D. thesis, Okla. State Univ. 68 p. 1965. [From Dissertation Abstr. 27(1B), 1966.] WR 124: 21

Richardson, John H., Ralph L. Ramsey, and L. E. Starr. BAT RABIES IN GEORGIA, 1956-65. Public Health Repts. 81(11): 1031-1035, 2 figs. Nov. 1966. WR 124: 21
A review of 36 cases of laboratory-confirmed rabies in 531 insectivorous bats examined in Ga. during 1956-65.

Rippy, Charles L. THE BACULUM IN MYOTIS SODALIS AND MYOTIS AUSTRORIPARIUS AUSTRORIPARIUS. Trans. Ky. Acad. Sci. 26(1-2): 19-21. 1965. [From J. Mammal. 47(4), 1966.] WR 124: 21

Spencer, Albert W., and David Pettus. HABITAT PREFERENCES OF FIVE SYMPATRIC SPECIES OF LONG-TAILED SHREWS. Ecology 47(4): 677-683, 2 figs. Summer 1966. WR 124: 21
[Fort Lewis Coll., Durango, Colo.] "Sorex palustris, S. cinereus, S. vagrans, S. nanus, and Microsorex hoyi."--Courtesy/ Paul A. Stewart.

Stampa, S., and N. K. Hobson. CONTROL OF SOME INTERNAL PARASITES OF CHINCHILLAS. J. Am. Vet. Med. Assoc. 149(7): 929-932. 1 Oct. 1966. WR 124: 21
[Rhodes Univ., Grahamstown, Cape Province, South Africa.]

Stebbings, R. E. A POPULATION STUDY OF BATS OF THE GENUS PLECOTUS. J. Zool. (Proc. Zool. Soc. London) 150(1): 53-75, 6 figs. Sept. 1966. WR 124: 21
[Nature Conservancy, Furzebrook Res. Sta., Wareham, Dorset, England.] "Plecotus auritus and P. austriacus."

Williams, Timothy C., Janet M. Williams, and Donald R. Griffin. THE HOMING ABILITY OF THE NEOTROPICAL BAT PHYLLOSTOMUS HASTATUS, WITH EVIDENCE FOR VISUAL ORIENTATION. Animal Behaviour 14(4): 468-473, 4 figs. Oct. 1966. WR 124: 21
[Rockefeller Univ., New York, N.Y.]

RABBITS & PIKAS

Bookhout, Theodore Arnold. THE SNOWSHOE HARE IN UPPER MICHIGAN: ITS BIOLOGY AND FEEDING COACTIONS WITH WHITE-TAILED DEER. Ph.D. thesis, Univ. Mich. 263 p. 1963. [From Dissertation Abstr. 24(4), 1963.] WR 124: 21
See WR 119: 9.

Fickess, Douglas Ricardo. SEASONAL SUDANOPHILIC VARIATION IN THE COTTONTAIL (SYLVILAGUS FLORIDANUS) ADRENAL CORTEX. Ph.D. thesis, Univ. Mo. 118 p. 1963. [From Dissertation Abstr. 24(8), 1964.] WR 124: 21

Hayden, Page. SEASONAL OCCURRENCE OF JACKRABBITS ON JACKASS FLAT, NEVADA. J. Wildl. Mgmt. 30(4): 835-838, 1 fig. Oct. 1966. WR 124: 21
[Northrop Space Labs., Hawthorne, Calif.] Abstract: The numbers of black-tailed jackrabbits (Lepus californicus) on a 40-square-mile portion of the Atomic Energy Commission's Nevada Test Site (in Nye County) were studied monthly from July, 1959, to June, 1960. Density index values were determined by driving a 50-mile census route. Absolute density values were determined by walking three census areas with a total of 8 linear miles. The density index decreased by a factor of seven between the spring high and the winter low. Concentration of hares was noted in the early winter and hypothesized to be related to the scarcity of water. The spring highs of 0.22 and 0.18 hare/acre and yearly average of 0.08 hare/acre seem to be comparable to density estimates in other arid areas.

Hayward, John S. ABNORMAL CONCENTRATIONS OF RESPIRATORY GASES IN RABBIT BURROWS. J. Mammal. 47(4): 723-724, 1 fig. Nov. 1966. WR 124: 22
[Univ. Alberta, Edmonton, Canada.] Oryctolagus cuniculus in Australia.

Hughes, R. L., and I. Rowley. BREEDING SEASON OF FEMALE WILD RABBITS IN NATURAL POPULATIONS IN THE RIVERINA AND SOUTHERN TABLELANDS DISTRICTS OF NEW SOUTH WALES. CSIRO Wildl. Res. 11(1): 1-10, 1 fig. Oct. 1966. WR 124: 22
[CSIRO, Canberra, Australia.] Summary: The breeding seasons in females in natural populations of wild rabbits in the Riverina and Southern Tablelands districts of New South Wales have been studied. The availability of green food plants was a necessary prerequisite for the initiation of breeding and for the maintenance of maximum response. The drying or seeding of pasture at first caused reduced breeding and later resulted in either an extremely low level of breeding or complete cessation. A well-defined autumn-spring breeding season occurred in the Riverina district. In the Southern Tablelands, the main breeding period started in the late winter (July) and continued until early summer when pastures dried out. A relatively short anoestrus followed. Restoration of pasture conditions apparently ideal for rabbit breeding occurred in early autumn as a result of late summer-early autumn rains. The consequent breeding response was, in fact, only abortive. This was believed to be due to a type of reproductive exhaustion or refractory period causally associated with the brevity of the preceding anoestrous period that followed the intensive spring-summer breeding period.

Keith, Lloyd B. HABITAT VACANCY DURING A SNOWSHOE HARE DECLINE. J. Wildl. Mgmt. 30(4): 828-832, 2 figs. Oct. 1966. WR 124: 22
[Univ. Wis., Madison.] Abstract: Changes in numbers and distribution of snowshoe hares (Lepus americanus) on a square-mile study area at Rochester, Alberta, are described. Data spanned a 2-year period, 1962-64, during which the hare population was undergoing a cyclic decline. Analyses of survival, reproduction, and movement indicated that intrapopulation movements rather than differential survival or reproduction were primarily responsible for the observed changes in hare distribution which accompanied the population decrease.

Marsden, Halsey Means. SOCIAL BEHAVIOR IN THE COTTONTAIL RABBIT. Ph.D. thesis, Univ. Mo. 140 p. 1963. [From Dissertation Abstr. 24(8), 1964.] WR 124: 22
See WR 114: 15.

Mech, L. David, Keith L. Heezen, and Donald B. Siniff. ONSET AND CESSATION OF ACTIVITY IN COTTONTAIL RABBITS AND SNOWSHOE HARES IN RELATION TO SUNSET AND SUNRISE. Animal Behaviour 14(4): 410-413, 3 figs. Oct. 1966. WR 124: 22
[Univ. Minn., Minneapolis.] Summary: Onset and cessation of activity were studied in cottontail rabbits (Sylvilagus floridanus) and snowshoe hares (Lepus americanus) through the use of an automatic radio-tracking system. These times varied greatly for the male cottontails studied in January but were more consistently correlated with sunrise-sunset times for the females in February. Contradictory conclusions of other workers are examined, and possible reasons for the contradictions given. Onset and cessation of activity in a female snowshoe hare studied in late winter and spring closely followed sunrise-sunset times, and there was a high correlation ($r = 0.95$) between seasonal changes in periods of daily inactivity and seasonal changes in length of daylight. Data suggest that cessation of activity may be stimulated by a certain light intensity rather than actual sunrise.

Mykytowycz, R. OBSERVATIONS ON ODORIFEROUS AND OTHER GLANDS IN THE AUSTRALIAN WILD RABBIT, ORYCTOLAGUS CUNICULUS (L.), AND THE HARE, LEPUS EUROPAEUS P. I. THE ANAL GLAND. CSIRO Wildl. Res. 11(1): 11-29, 4 figs. + 6 figs. on 3 pls. Oct. 1966. WR 124: 22
[CSIRO, Canberra, Australia.] The functioning of the anal gland for the purpose of territorial marking is suggested.--From summ.

Mykytowycz, R. OBSERVATIONS ON ODORIFEROUS AND OTHER GLANDS IN THE AUSTRALIAN WILD RABBIT, ORYCTOLAGUS CUNICULUS (L.), AND THE HARE, LEPUS EUROPAEUS P. II. THE INGUINAL GLANDS. CSIRO Wildl. Res. 11(1): 49-64, 4 figs. + 6 figs. on 3 pls. Oct. 1966. WR 124: 23

[CSIRO, Canberra, Australia.] The results obtained in the course of the study strengthen the view that the secretion (odor) from the inguinal glands is associated with sexual attraction.--From summ.

Mykytowycz, R. OBSERVATIONS ON ODORIFEROUS AND OTHER GLANDS IN THE AUSTRALIAN WILD RABBIT, ORYCTOLAGUS CUNICULUS (L.), AND THE HARE, LEPUS EUROPAEUS P. III. HARDER'S, LACHRYMAL, AND SUBMANDIBULAR GLANDS. CSIRO Wildl. Res. 11(1): 65-90, 9 figs. + 4 figs. on 2 pls. Oct. 1966. WR 124: 23

[CSIRO, Canberra, Australia.]

Mykytowycz, R., and M. L. Dudzinski. A STUDY OF THE WEIGHT OF ODORIFEROUS AND OTHER GLANDS IN RELATION TO SOCIAL STATUS AND DEGREE OF SEXUAL ACTIVITY IN THE WILD RABBIT, ORYCTOLAGUS CUNICULUS (L.). CSIRO Wildl. Res. 11(1): 31-47, 9 figs. Oct. 1966. WR 124: 23

[CSIRO, Canberra, Australia.] There were statistically significant differences in the weights of the inguinal, thyroid, and lachrymal glands of males from enclosures with different densities of populations. The results suggest the importance of odoriferous glands in the social and territorial activities of the wild rabbit.--From summ.

Pederson, Vernon Clayton. ULCERATIVE ENTERITIS IN THE COTTONTAIL RABBIT (SYLVILAGUS FLORIDANUS). Ph.D. thesis, Univ. Mo. 111 p. 1963. [From Dissertation Abstr. 24(8), 1964.] WR 124: 23

Russell, Kenneth R. EFFECTS OF A COMMON ENVIRONMENT ON COTTONTAIL OVULATION RATES. J. Wildl. Mgmt. 30(4): 819-827, 3 figs. Oct. 1966. WR 124: 23

[Ohio Div. Wildl., Columbus.] Abstract: Cottontails (Sylvilagus floridanus) from unglaciated southeastern (SE) Ohio and glaciated west-central (WC) Ohio were placed in four 5-acre pens on the Delaware Wildlife Area in autumn, 1962. The following spring 141 were recovered from the pens and an additional 81 females were collected in the SE and WC regions to serve as controls. The objective of the experiment was to determine the effects of a common environment on the ovulation rates of cottontails from two populations that occur in dissimilar habitats and have different ovulation rates. There was no significant difference in the mean number of corpora lutea per doe between the SE (4.81) and the WC (5.00) experimental populations. There was a significant difference between the SE control (3.92) and each of the other three populations. The WC control population averaged 5.23 corpora lutea per doe. No relationship was found between paunched body weights and ovulation rates. It was concluded that ovulation rates of Ohio cottontails are controlled by the environment (probably physical rather than social) and not by genetic makeup and that both ovulation rates and paunched body weights of females in southeastern Ohio are significantly lower than those of females in west-central Ohio.

Stevens, Vernon Cecil. A STUDY OF CERTAIN ENDOCRINE AND PHYSIOLOGICAL ASPECTS OF REPRODUCTION IN THE COTTONTAIL RABBIT SYLVILAGUS FLORIDANUS MEARNSII. Ph.D. thesis, Ohio State Univ. 212 p. 1962. [From Dissertation Abstr. 23(8), 1963.] WR 124: 23

RODENTS--MISCELLANEOUS

Aellen, V. LES RONGEURS DE BASSE CÔTE-D'IVOIRE. [THE RODENTS OF LOWER IVORY COAST.] Rev. Suisse Zool. 72(37): 755-767. Dec. 1965. [From J. Mammal. 47(4), 1966. In French.] WR 124: 23

Bazzea, A. [OUR FORESTS HAVE A STUBBORN ENEMY.] Vicenza Econ. 21(2): 104-106. Feb. 1966. [From Bibliog. Agr. 30(8), 1966. In Italian.] WR 124: 24
"The doormouse."

Beer, James R., and Charles F. MacLeod. SEASONAL POPULATION CHANGES IN THE PRAIRIE DEER MOUSE. Am. Midland Nat. 76(2): 277-289. Oct. 1966. WR 124: 24
[Univ. Minn., St. Paul.] Abstract: Population turnover, structure and reproduction of Peromyscus maniculatus bairdii were analyzed for the period of July 1954 through July 1955, based on samples totaling 2112 animals. The breeding season started about 1 April and ended by 30 September, with an occasional female becoming pregnant in late March and a few producing young in October. Females in subadult and adult pelage produced litters at the rate of one every 27 to 30 days during the breeding season. During the first half of the breeding season from 17 to 34% of the young born survived to become independent, whereas during the latter half of the season 36 to 61% survived this long. During the snow-free period animals old enough to be independent were lost at the rate of about 40% per month, whereas during the winter the mortality rate was about 26% per month.

Bergstedt, Bo. DISTRIBUTION, REPRODUCTION, GROWTH AND DYNAMICS OF THE RODENT SPECIES CLETHRIONOMYS GLAREOLUS (SCHREBER), APODEMUS FLAVICOLLIS (MELCHIOR) AND APODEMUS SYLVATICUS (LINNÉ) IN SOUTHERN SWEDEN. Oikos 16(1-2): 132-160. 1965. [From J. Mammal. 47(4), 1966.] WR 124: 24

Bradshaw, William Newman. VARIATION OF THE WOOD-MOUSE, PEROMYSCUS LEUCOPUS, UNDER LINEAR PATTERNS OF DISTRIBUTION IN TEXAS. Ph.D. thesis, Univ. Texas. 153 p. 1962. [From Dissertation Abstr. 23(10), 1963.] WR 124: 24

Brown, Larry Nelson. ECOLOGY AND REPRODUCTION OF PEROMYSCUS BOYLII, P. LEUCOPUS, AND P. MANICULATUS IN THE OZARK MOUNTAINS. Ph.D. thesis, Univ. Mo. 187 p. 1963. [From Dissertation Abstr. 24(3), 1963.] WR 124: 24
See WR 114: 16.

Burge, Betty Lou. VAGINAL CASTS PASSED BY CAPTIVE PORCUPINE. J. Mammal. 47(4): 713-714, 2 figs. Nov. 1966. WR 124: 24
[Youth Sci. Inst., San Jose, Calif.]

Carpenter, Roger Edwin. A COMPARISON OF THERMOREGULATION AND WATER METABOLISM IN THE KANGAROO RATS, DIPODOMYS AGILIS AND DIPODOMYS MERRIAMI. Ph.D. thesis, Univ. Calif. (Los Angeles). 115 p. 1963. [From Dissertation Abstr. 24(2), 1963.] WR 124: 24

Childs, H. E., Jr., and G. E. Cosgrove. A STUDY OF PATHOLOGICAL CONDITIONS IN WILD RODENTS IN RADIOACTIVE AREAS. Am. Midland Nat. 76(2): 309-324, 13 figs. Oct. 1966. WR 124: 24
[Cerritos Coll., Norwalk, Calif.] Comparisons were made using wild Peromyscus leucopus, Sigmodon hispidus, and Oryzomys palustris from radio-contaminated and uncontaminated sites. The studies included length measurement, body weight, spleen and adrenal weights, gross and microscopic necropsy examination, determination of packed red cell volume and differential leukocyte count, and collection of parasites. No significant differences attributable to exposure to radiation were seen.--From abstr.

Chipman, Robert Kenneth. AGE DETERMINATION OF THE COTTON RAT, SIGMODON HISPIDUS, BASED ON KNOWN-AGE SPECIMENS. Ph.D. thesis, Tulane Univ. 85 p. 1963. [From Dissertation Abstr. 24(8), 1964.] WR 124: 24
See WR 117: 22.

Cundiff, Milford Fields. ALTITUDINAL CHANGES VERSUS HEMATIC CHANGES IN PEROMYSCUS MANICULATUS. Ph.D. thesis, Univ. Colo. 123 p. 1966. [From Dissertation Abstr. 27(4B), 1966.] WR 124: 24

DeLong, Karl T. POPULATION ECOLOGY OF FERAL HOUSE MICE: INTERFERENCE BY MICROTUS. Ecology 47(3): 481-484, 3 figs. Late Spring 1966. WR 124: 25

[Ripon Coll., Ripon, Wis.] Abstract: House mouse populations were studied from Oct. 1963 until May 1964 in the presence and absence of meadow mice by experimentally manipulating two field grids. Supplemental food was supplied to the grids to eliminate food as a variable in the interaction between the two species. The rate of population increase for Mus was halved in the presence of Microtus in spite of nearly equal body growth rates, reproductive rates, and survival rates of trappable house mice on the two areas. However, recruitment of young into the trappable population was halved in the presence of Microtus. These field data and the data from a laboratory study of the two species in artificial burrow systems indicated that Microtus caused mortality of Mus nestlings.--Courtesy/ Paul A. Stewart.

Downhower, Jerry F., and E. Raymond Hall. THE POCKET GOPHER IN KANSAS. Univ. Kans. Museum Nat. Hist. Misc. Publ. no. 44. p. 1-32, 8 figs. 26 Oct. 1966. WR 124: 25

[Univ. Kans., Lawrence.] The plains pocket gopher, Geomys bursarius (Shaw) occurs in all but southeastern Kans. Along the southeastern margin of the gopher's geographic range it lives only in soils made up of less than 30 percent clay and more than 40 percent sand. Soils of southern Kans. contain too much clay or too little sand, or both, to support pocket gophers. A gopher deposits approximately two and one-fourth tons (52 cubic feet) of soil on the surface of the ground annually. Nests are below the frost line. Man's cultivation of the soil eliminates this species of pocket gopher. About the only valid complaint in Kans. against the plains pocket gopher is that it damages alfalfa or constitutes a nuisance by building mounds in alfalfa fields. Directions are provided on the best method (trapping) of removing the species from areas where it is unwelcome. By reason of contributing to the health and fertility of soil the plains pocket gopher on grasslands deserves to be let alone as a normal member of the grassland community.--From abstr.

Goertz, John William. THE INFLUENCE OF HABITAT QUALITY UPON DENSITY OF COTTON RAT POPULATIONS. Ph.D. thesis, Okla. State Univ. 92 p. 1962. [From Dissertation Abstr. 24(4), 1963.] WR 124: 25

See WR 116: 18.

Gunderson, Harvey L(orraine). AN EIGHT AND ONE-HALF YEAR STUDY OF THE RED-BACKED VOLE (CLETHRIONOMYS GAPPERI VIGORS) AT CEDAR CREEK FOREST, ANOKA AND ASANTI COUNTIES, MINNESOTA. Ph.D. thesis, Univ. Mich. 119 p. 1962. [From Dissertation Abstr. 23(10), 1963.] WR 124: 25

Janes, Donald Wallace. THE REPRODUCTIVE SYSTEM OF THE PRAIRIE VOLE, MICROTUS OCHROGASTER. Ph.D. thesis, Kans. State Univ. 116 p. 1963. [From Dissertation Abstr. 24(1), 1963.] WR 124: 25

King, John A., and Ronald G. Weisman. VISUAL DISCRIMINATION IN DEERMICE. Psychonomic Sci. 4(1): 43-44. 5 Jan. 1966. [From J. Mammal. 47(4), 1966.] WR 124: 25

Kott, Edward. FACTORS AFFECTING ESTIMATES OF MEADOW MOUSE POPULATIONS. Ph.D. thesis, Univ. Toronto. 1965. [From Dissertation Abstr. 27(3B), 1966.] WR 124: 25

"To obtain a copy please write directly to the National Library of Canada."

Krebs, Charles J. DEMOGRAPHIC CHANGES IN FLUCTUATING POPULATIONS OF MICROTUS CALIFORNICUS. Ecol. Monographs 36(3): 239-273, 3 figs. Summer 1966. WR 124: 25

[Ind. Univ., Bloomington.] A significant contribution. Changes in population numbers as they relate to reproduction, mortality, growth, and movement are discussed. Food, disease, predation, and self-regulatory mechanisms are discussed as factors regulating populations.--Courtesy/ Paul A. Stewart.

260-315 O - 67 - 4

Kristoffersson, Rolf, and Antti Soivio. DURATION OF HYPOTHERMIA PERIODS AND TYPE OF RESPIRATION IN THE HIBERNATING GOLDEN HAMSTER, MESOCRICETUS AURATUS WATERH. Ann. Zool. Fennici (Helsinki) 3(1): 66-67. 1966. [From J. Mammal. 47(4), 1966.] WR 124: 26

Layne, James N. POSTNATAL DEVELOPMENT AND GROWTH OF PEROMYSCUS FLORIDANUS. Growth 30(1): 23-45. Mar. 1966. [From J. Mammal. 47(4), 1966.] WR 124: 26

Marcström, Vidar. ON THE REPRODUCTION OF THE NORWEGIAN LEMMING LEMMUS LEMMUS L. Viltrevy 4(4): 311-342, 6 figs. 1966. Four kronen. In English with Swedish summ. WR 124: 26

Postpartum oestrus, birth of young, sex-ratio and development of young, size of litters, duration of pregnancy, sexual activity, and reproductive capacity are major topics of discussion. Stress and its effect on reproduction is briefly treated.

Negus, Norman C., and Aelita J. Pinter. REPRODUCTIVE RESPONSES OF MICROTUS MONTANUS TO PLANTS AND PLANT EXTRACTS IN THE DIET. J. Mammal. 47(4): 596-601. Nov. 1966. WR 124: 26

[Tulane Univ., New Orleans, La.] Abstract: Breeding experiments with Microtus montanus indicate that small dietary supplements of either sprouted wheat or acetone-ether extracts of sprouted wheat elicited improved reproductive performance. The improvement resulted primarily in more frequent postpartum matings and lower rates of litter loss. Spinach extract, fed to 4-week-old female Microtus, stimulated an increase in uterine weight and in number of developing follicles in the ovaries. Sprouted wheat, fed to immature females, stimulated immediate onset of estrus, as well as an increase in uterine and adrenal weights. It is suggested that hormone-like substances in plants may influence reproduction in natural populations of Microtus montanus.

Obeng, Letitia E. THE HELMINTH FAUNA OF RODENTS OF THE SUB-FAMILY MURINAE IN GHANA. Ghana J. Sci. 5(1): 60-64. Apr. 1965. [From J. Mammal. 47(4), 1966.] WR 124: 26

Ogilvie, D. M., and R. H. Stinson. TEMPERATURE SELECTION IN PEROMYSCUS AND LABORATORY MICE, MUS MUSCULUS. J. Mammal. 47(4): 655-660, 1 fig. Nov. 1966. WR 124: 26

[Defence Res. Med. Lab., P.O. Box 62, Postal Station "K", Toronto, Ontario.] "Peromyscus leucopus noveboracensis, P. maniculatus gracilis, P. maniculatus bairdi and Mus musculus."

Rasmussen, David Irvin. BLOOD GROUP INHERITANCE, POLYMORPHISM AND INBREEDING IN NATURAL POPULATIONS OF THE DEER MOUSE, PEROMYSCUS MANICULATUS. Ph.D. thesis, Univ. Mich. 61 p. 1963. [From Dissertation Abstr. 24(4), 1963.] WR 124: 26

Roberts, Don Raol. RODENT MOVEMENTS IN A CUTOVER FOREST OF THE SIERRA NEVADA, CALIFORNIA. Ph.D. thesis, Univ. Calif. (Berkeley). 103 p. 1962. [From Dissertation Abstr. 24(3), 1963.] WR 124: 26

Rood, J. P. OBSERVATIONS ON THE REPRODUCTION OF PEROMYSCUS IN CAPTIVITY. Am. Midland Nat. 76(2): 496-503, 2 figs. Oct. 1966. WR 124: 26

[Mich. State Univ., East Lansing.] Abstract: Reproductive data obtained from 445 captive female Peromyscus of seven species are summarized. The maximum total litters was 26 and the maximum in one year 14, both in P. leucopus. Average litters per year varied from 2.4 in P. floridanus to 8.7 in P. maniculatus bairdii and mean litter size from 1.72 in P. floridanus to 4.84 in P. maniculatus gracilis. The maximum number of young in a litter was 11, recorded for P. m. bairdii. Evidence for a postpartum estrus in P. californicus and P. eremicus is presented. P. maniculatus, P. eremicus and P. polionotus had the majority of their litters between 9 a.m. and 5 p.m. Litter mortality because of cannibalism or desertion varied from 19% in P. m. gracilis to 56% in P. floridanus. Under constant laboratory conditions of food, temperature, and lighting the mice bred throughout the year with only slight variation

in percentages of females breeding from month to month. Species in the subgenus Peromyscus are smaller in body size and have a lower litter mortality, larger litters, and greater reproductive potential than those of the subgenera Haplomylomys and Podomys.

Sargeant, Alan B. A LIVE TRAP FOR POCKET GOPHERS. J. Mammal. 47(4): 729-731, 1 fig. Nov. 1966. WR 124: 27
[Bur. Sport Fisheries & Wildl., Bethel, Minn.]

Sheppe, Walter. EXPLORATION BY THE DEER MOUSE, PEROMYSCUS LEUCOPUS. Am. Midland Nat. 76(2): 257-276, 4 figs. Oct. 1966. WR 124: 27
[Calif. Acad. Sci., San Francisco.] The exploration of new objects and new environments by Peromyscus leucopus was observed in laboratory pens and inferred from the number of smoked paper track records obtained from track shelters (milk cartons or tin cans) in the field. The exploration and settling of uninhabited islands by introduced mice were followed by plotting the locations of track records.--From abstr.

Smyth, Michael. WINTER BREEDING IN WOODLAND MICE, APODEMUS SYLVATICUS, AND VOLES, CLETHRIONOMYS GLARBOLUS AND MICROTUS AGRESTIS, NEAR OXFORD. J. Animal Ecol. 35(3): 471-485, 6 figs. Oct. 1966. WR 124: 27
[Dept. Zool., Univ. Adelaide, South Australia.] "In this paper the relation between acorn crops and winter breeding in small woodland rodents is examined by means of two correlations, one between acorn crops and winter breeding in one part of Wytham Woods, near Oxford, over the last 16 years, the other between acorn crops and winter breeding in different parts of this same wood in December 1962."

Terman, C. Richard. POPULATION FLUCTUATIONS OF PEROMYSCUS MANICULATUS AND OTHER SMALL MAMMALS AS REVEALED BY THE NORTH AMERICAN CENSUS OF SMALL MAMMALS. Am. Midland Nat. 76(2): 419-426, 2 figs. Oct. 1966. WR 124: 27
[Coll. William & Mary, Williamsburg, Va.] Abstract: Data collected in the "North American Census of Small Mammals" were analyzed to reveal fluctuations in local populations of several species of small mammals through successive years of trapping. The failure of a species to fluctuate widely is suggested as indicative of effective biological or sociobiological controlling mechanisms. Peromyscus maniculatus and Blarina brevicauda populations exhibited a markedly smaller average range of population fluctuations than did Microtus montanus, M. californicus, M. pennsylvanicus and Reithrodontomys megalotis. These ranges in fluctuations between maximum and minimum population levels were evaluated according to the average number of years required for the change to take place. This evaluation was referred to as the Fluctuation Index (F. I.) and reflected the potential for a species to fluctuate in a short period of time. Blarina brevicauda (9.6) and Peromyscus maniculatus (10.6) exhibited the two lowest F. I. values, while Microtus montanus and M. californicus exhibited the two highest (52.3 and 80, respectively). The data support the hypothesis that Peromyscus maniculatus and Blarina brevicauda may be more sensitive to factors controlling population growth and thus their growth is limited within a narrower numerical range of variability than is true for more widely fluctuating forms.

Van Cura, Nancy J., and Donald F. Hoffmeister. A TAXONOMIC REVIEW OF THE GRASSHOPPER MICE, ONYCHOMYS, IN ARIZONA. J. Mammal. 47(4): 613-630, 6 figs. Nov. 1966. WR 124: 27
[Austin High School, Chicago, Ill.]

Warnock, John Edward. THE EFFECTS OF CROWDING ON THE SURVIVAL OF MEADOW VOLES (MICROTUS PENNSYLVANICUS) DEPRIVED OF COVER AND WATER. Ph.D. thesis, Univ. Wis. 130 p. 1963. [From Dissertation Abstr. 23(11), 1963.] WR 124: 27
See WR 121: 23.

Wecker, Stanley Charles. THE ROLE OF EARLY EXPERIENCE IN HABITAT SELECTION BY THE PRAIRIE DEER MOUSE PEROMYSCUS MANICULATUS BAIRDI. Ph.D. thesis, Univ. Mich. 102 p. 1962. [From Dissertation Abstr. 23(9), 1963.] WR 124: 28
See WR 112: 23.

RATTUS & MUS

Figala, Jaroslav. THE REPRODUCTION AND POPULATION STRUCTURE OF THE BLACK RAT, RATTUS RATTUS (L.), IN THE CZECHOSLOVAK HABITATS. Vestnik Cesk. Spolecnosti Zool. 28(1): 48-67, illus. 1964. [From Biol. Abstr. 47(14), 1966. With Czech summ.] WR 124: 28
[Agr. High School, Budejovice, Czechoslovakia.]

Medway, Lord. THE SPECIFIC RELATIONS OF RATTUS TIOMANICUS (MILLER). p. 33-38. In: (Observations on the fauna of Pulau Tioman and Pulau Tulai.) Bull. Nat. Mus. Rep. Singapore (34). 158 p. 1966. [From J. Mammal. 47(4), 1966.] WR 124: 28

Rand, R. P., A. C. Burton, and T. Ing. THE TAIL OF THE RAT, IN TEMPERATURE REGULATION AND ACCLIMATIZATION. Canadian J. Physiol. Pharmacol. 43(2): 257-267. Mar. 1965. [From J. Mammal. 47(4), 1966.] WR 124: 28

SCIURIDS

Forbes, Richard B. STUDIES OF THE BIOLOGY OF MINNESOTAN CHIPMUNKS. Am. Midland Nat. 76(2): 290-308. Oct. 1966. WR 124: 28
[Portland State Coll., Portland, Oreg.] Abstract: Eastern and least chipmunks (Tamias striatus and Eutamias minimus) from the Itasca area of Minnesota were studied with regard to their general ecology, morphological variation at different ages, seasonal differences in age composition of populations, incidence of reproductive activity, and food preferences. The two species were found to be ecologically distinct from each other. From the data, some inferences are made concerning the phylogeny of these two chipmunks.

Forbes, Richard B. FALL ACCUMULATION OF FAT IN CHIPMUNKS. J. Mammal. 47 (4): 715-716. Nov. 1966. WR 124: 28
[Portland State Coll., Portland, Oreg.]

Nadler, Charles F. CHROMOSOMES AND SYSTEMATICS OF AMERICAN GROUND SQUIRRELS OF THE SUBGENUS SPERMOPHILUS. J. Mammal. 47(4): 579-596, 9 figs. Nov. 1966. WR 124: 28
[Northwestern Univ. Med. School, Chicago, Ill.]

BEAVER

Novakowski, Nicholas Stephen. POPULATION DYNAMICS OF A BEAVER POPULATION IN NORTHERN LATITUDES. Ph.D. thesis, Univ. Saskatchewan. 164 p. 1965. [From Dissertation Abstr. 27(4B), 1966.] WR 124: 28
Examination of beaver populations in the MacKenzie District of the Northwest Territories indicated that climatic and edaphic factors did not directly influence beaver densities. By using a new technique of molar closure and cementum deposition for determining ages it was found that a two-year-old group, previously unreported was present in the average colony. This was likely an adaptation to high density and the need for larger size, sexual maturity and a longer learning period prior to emigration and colonization in northern latitudes. Seasonal changes in apparent density were found but numbers and home sites were stabilized in the autumn food gathering period. Density changes were produced by regulated trapping and by emigration, and these mechanisms maintained the population in a relatively steady state. Food

and energy requirements during under-ice existence are low. Young beaver appear to grow during this period whereas adults lose weight. It was found that some beaver colonies exist in the winter at below basal levels without detriment and that an abundance of available food in the area was not reflected in the amount stored.

BEARS

Barnes, Victor G., Jr., and Olin E. Bray. BLACK BEARS USE DRAINAGE CULVERTS FOR WINTER DENS. J. Mammal. 47(4): 712-713. Nov. 1966. WR 124: 29
[Colo. Coop. Wildl. Res. Unit, Fort Collins.]

RACCOON, RINGTAIL, COATI

Simkin, Donald W. EXTRALIMITAL OCCURRENCES OF RACCOONS IN ONTARIO. Canadian Field-Nat. 80(3): 144-146, 1 fig. July-Sept. 1966. WR 124: 29
[Ontario Dept. Lands & Forests, Southern Res. Sta., Maple, Ontario, Canada.]

MUSTELIDS

Parker, R. L., and R. K. Sikes. DEVELOPMENT OF RABIES INHIBITING SUBSTANCE IN SKUNKS INFECTED WITH RABIES VIRUS. Public Health Repts. 81(10): 941-944. Oct. 1966. WR 124: 29
[Border Rabies Program, Public Health Serv., El Paso, Texas.]

Rosenzweig, Michael L. COMMUNITY STRUCTURE IN SYMPATRIC CARNIVORA. J. Mammal. 47(4): 602-612, 5 figs. Nov. 1966. WR 124: 29
[Bucknell Univ., Lewisburg, Pa.] Abstract: Predators that spend a large proportion of their food collecting budget on the catching and killing of prey after the prey have once been discovered are shown to specialize on prey of a certain size. Such specialist predators frequently coexist in hunting sets with other predators of similar morphology and hunting abilities. The coexistence is probably the result of size difference between the predator species, which leads to each predator species in a hunting-set taking a different set of prey species. On the basis of their differing sizes, weasels seem to comprise one such hunting-set, but all weasels eat mostly mouse-sized food. It is demonstrated that weasels differ in their degree of specialization on mouse-sized food, larger weasels taking a greater size variety. This difference is possibly a coexistence-stabilizing force. Theoretically, coexistence might occur between two competing species if the larger, poorer competitor preyed on the smaller, better one. Such a situation may be present within the weasel hunting set. In general, size differences provide a potent means of permitting similar species of carnivore to coexist.

Storm, G. L., and B. J. Verts. MOVEMENTS OF A STRIPED SKUNK INFECTED WITH RABIES. J. Mammal. 47(4): 705-708, 2 figs. Nov. 1966. WR 124: 29
[Ill. Nat. Hist. Surv., Urbana.] "This is a report on movements of a striped skunk, Mephitis mephitis, during a 28-day period prior to its death, presumably from a naturally acquired rabies infection.... Movements of the skunk were followed by use of radio-tracking equipment and techniques."

DOGS, WOLVES, FOXES

Hirth, R. S., and S. W. Nielsen. VASCULAR LESIONS OF DIROFILARIA IMMITIS IN THE RED FOX. J. Am. Vet. Med. Assoc. 149(7): 915-919, 8 figs. 1 Oct. 1966. WR 124: 29
[Univ. Conn., Storrs.]

DOGS, WOLVES, FOXES--Continued

Janes, Donald W., and H. T. Gier. DISTRIBUTION, NUMBERS, AND HUNTING OF FOXES IN KANSAS. Trans. Kans. Acad. Sci. 69(1): 23-31. Spring 1966. [From J. Mammal. 47(4), 1966.] WR 124: 30

Mech, Lucyan David. THE ECOLOGY OF THE TIMBER WOLF (CANIS LUPUS LINNAEUS) IN ISLE ROYALE NATIONAL PARK. Ph.D. thesis, Purdue Univ. 307 p. 1962. [From Dissertation Abstr. 23(10), 1963.] WR 124: 30
See WR 122: 27.

Ozoga, John J., and Elsworth M. Harger. WINTER ACTIVITIES AND FEEDING HABITS OF NORTHERN MICHIGAN COYOTES. J. Wildl. Mgmt. 30(4): 809-818, 1 fig. Oct. 1966. WR 124: 30
[Mich. Dept. Conserv., Shingleton.] Abstract: Winter habits of the coyote (Canis latrans) were investigated on Beaver Island, in northern Lake Michigan, and in the vicinity of Shingleton in Michigan's Upper Peninsula during the period 1956-65. Information on movements, general behavior, and feeding habits were obtained by tracking coyotes for 827 miles in snow, and by examining 92 scats collected along their trails. White-tailed deer (Odocoileus virginianus) carrion constituted the coyote's primary winter food in both areas. Coyotes actually killed few deer, and usually brought down only the smallest and weakest animals. Although certain other abundant prey species were available, coyotes were relatively unsuccessful in capturing them. The influence of this predator in controlling game populations in winter appears to be negligible.

CATS

Goertz, John W., and Roland Abegg. PUMAS IN LOUISIANA. J. Mammal. 47(4): 727. Nov. 1966. WR 124: 30
[La. Polytech. Inst., Ruston.] Felis concolor coryi in Caddo Parish in 1965.

Graham, A. EAST AFRICAN WILD LIFE SOCIETY CHEETAH SURVEY: EXTRACTS FROM THE REPORT BY WILDLIFE SERVICES. East African Wildl. J. 4: 50-55. Aug. 1966. WR 124: 30
[P.O. Box 21199, Nairobi, Kenya.] Group size, juvenile age categories, litter size and prey species of Acionyx jubatus are discussed.

BIG GAME, GENERAL

Agnew, A. D. Q. THE USE OF GAME TRAILS AS A POSSIBLE MEASURE OF HABITAT UTILISATION BY LARGER MAMMALS. East African Wildl. J. 4: 38-46, 2 figs. Aug. 1966. WR 124: 30
[Univ. College, P.O. Box 30197, Nairobi, Kenya.] Summary: Percentage cover of game trails is discussed as a possible measure of total habitat utilisation by larger mammals and a technique for its measurement is described. Game trail cover in Tsavo National Park (East) at Voi has been analysed in two areas, woodland and grassland. Of these the woodland had the higher trail cover (10.69%) and grassland the lower (7.57%). The interpretation of these results is discussed.

Bergerud, Arthur T., and H. Lloyd Russell. EXTRACTION OF INCISORS OF NEWFOUNDLAND CARIBOU. J. Wildl. Mgmt. 30(4): 842-843, 1 fig. Oct. 1966. WR 124: 30
[Univ. British Columbia, Vancouver.] Abstract: By use of dental forceps and elevator, the 2nd or 3rd incisor was extracted from 107 live caribou (Rangifer tarandus) for the purpose of aging the animals by counting annuli in the cementum. No adverse effects on the animals were noted.

Dowsett, R. J. BEHAVIOUR AND POPULATION STRUCTURE OF HARTEBEEST IN THE KAFUE NATIONAL PARK. Puku 4: 147-154, 1 fig. 1966. WR 124: 31

Summary: Territorial, reproductive, and social behaviour of hartebeest (Alcelaphus lichtensteini Peters) was studied in the southern part of the Kafue National Park from December 1964 to February 1965. The species was found to be territorial in behaviour, the population being separated into family and bachelor groups. These are generally stable in composition except during the rutting period in November and December when fierce fighting may take place between harem males and rivals from the bachelor groups. Demarcation of territory is by horning of earth, apparently accompanied by deposit of secretion from the preorbital glands. Rutting behaviour is described. In family groups the herd bull occupies a dominant position although a female usually leads in flight from danger. In bachelor groups order of dominance is less apparent. Alarm sounds and other alert behaviour are described. Sight and hearing are good, but sense of smell seems less acute. Other activity patterns are discussed. The male:female ratio in adult and yearlings was 1:2.5 and the calf:adult female ratio 1:1.7. Possible causes of the differential sex ratio are discussed. Management considerations are outlined.

Dowsett, R. J. WET SEASON GAME POPULATIONS AND BIOMASS IN THE NGOMA AREA OF THE KAFUE NATIONAL PARK. Puku 4: 135-145, 1 fig. 1966. WR 124: 31

Summary: Population structure of ungulates was observed during the wet season in about 35 square miles round Ngoma, in the Kafue National Park. The study area was for most species a self-contained ecological unit, and thus observed samples were probably representative of the population as a whole. Biomass for these and certain non-ungulate species was assessed in relation to habitat preferences. The high figure for thickets was due to the seasonal occupation of this habitat by buffalo, grassland and woodland being otherwise the most productive. The overall average biomass was 7,678 lbs. per square mile.

Evans, Charles D., Willard A. Troyer, and Calvin J. Lensink. AERIAL CENSUS OF MOOSE BY QUADRAT SAMPLING UNITS. J. Wildl. Mgmt. 30(4): 767-776, 2 figs. Oct. 1966. WR 124: 31

[U.S. Bur. Commercial Fisheries, Anchorage, Alaska.] Abstract: A quadrat sampling method for conducting aerial census of moose (Alces americana) that is adapted to extensive units of habitat was developed and applied in two areas of Alaska. This report describes briefly the steps that were used in developing and applying the quadrat method. The areas were stratified into units of high, medium, and low moose density based on current observations. A sample of quadrats 1 square mile in area was drawn from each unit and a detailed census from the air was made on each sample quadrat. Both applications of this method provided usable data at reasonable cost. Results of these censuses were compared with results obtained by other methods in the same localities. With the quadrat method as a standard, results indicated that about half the animals were seen in an attempt at total area census and about one-fourth were seen when a continuous linear strip transect 0.5 mile in width was covered.

Floss, Ludmilla. BIBLIOGRAPHY ON REINDEER IN RUSSIA. USDI, Library References Services. iii + 9 p. May 1966. WR 124: 31

"A selected bibliography of recent articles, in the Russian language only, on breeding, diseases and pests, feeding and feeds, industry, management, and parasites of reindeer."

Foster, J. B. THE GIRAFFE OF NAIROBI NATIONAL PARK: HOME RANGE, SEX RATIOS, THE HERD, AND FOOD. East African Wildl. J. 4: 139-148, 3 figs. Aug. 1966. WR 124: 31

[Univ. College, P.O. Box 30197, Nairobi, Kenya.]

Goddard, John. MATING AND COURTSHIP OF THE BLACK RHINOCEROS (DICEROS BICORNIS L.). East African Wildl. J. 4: 69-75, 8 figs. Aug. 1966. WR 124: 31

[Ngorongoro Conserv. Area, P.O. Box 3102, Arusha, Tanzania.]

Hay, P. W., and P. W. Martin. PYTHON PREDATION ON UGANDA KOB. East African Wildl. J. 4: 151-152, 1 fig. Aug. 1966. WR 124: 32
[P.O. Box 8, Fort Portal, Uganda.]

Hibbs, L. Dale. A LITERATURE REVIEW ON MOUNTAIN GOAT ECOLOGY. Colo. Dept. Game, Fish & Parks, and Colo. Coop. Wildl. Res. Unit, Spec. Rept. no. 8. iv + 23 p., 5 figs. July 1966. $1.00. WR 124: 32
History, distribution and numbers, classification, life history, ecology and management of Oreamnos americanus.

Hillermark, K. A DISEASE RESEMBLING PARATUBERCULOSIS (JOHNE'S DISEASE) IN ROE DEER (CAPREOLUS CAPREOLUS L.) / AN AETIOLOGICAL AND PATHO-ANATOMICAL STUDY. Acta Vet. Scandinavica 7(4): 330-363, 14 figs. 1966. In English with German and Swedish summ. WR 124: 32
[Natl. Vet. Inst., Stockholm, Sweden.]

Holloway, C. W. THE IMPACT OF BIG GAME ON FOREST POLICY IN THE MOUNT KENYA AND NORTHEAST ABERDARE FOREST RESERVES. East African Agr. Forest. J. 30(4): 370-380. Apr. 1965. [From Bibliog. Agr. 30(5), 1966.] WR 124: 32
Chiefly damage caused by game.

Howard, Volney W., Jr. AN OBSERVATION OF PARTURITION IN THE PRONGHORN ANTELOPE. J. Mammal. 47(4): 708-709. Nov. 1966. WR 124: 32
[Idaho Coop. Wildl. Res. Unit, Moscow.]

Kerr, Gordon R., and John C. Holmes. PARASITES OF MOUNTAIN GOATS IN WEST CENTRAL ALBERTA. J. Wildl. Mgmt. 30(4): 786-790. Oct. 1966. WR 124: 32
[Alberta Dept. Lands & Forests, Fish & Wildl. Div., Edmonton, Alberta.] Abstract: From August, 1961, to September, 1963, 10 mountain goats (Oreamnos americanus) from two study areas in west-central Alberta were examined for parasites. Two species of ticks, two species of cestodes, eight species of nematodes from the digestive tract, and one species of lungworm were found. Ticks were more abundant on prime winter and early spring goat range than on similar areas not on winter range. Animals less than 1 year old had fewer species of parasites than older ones. The presence of the nematode Teladorsagia davtiani constitutes a new host record for this parasite. Although all goats over 2 weeks of age that were examined had parasite infestations, no evidence of mortality directly attributable to any parasite or group of parasites was found.

Kiley, Marthe. A PRELIMINARY INVESTIGATION INTO THE FEEDING HABITS OF THE WATERBUCK BY FAECAL ANALYSIS. East African Wildl. J. 4: 153-157. Aug. 1966. WR 124: 32
[Univ. Sussex, Falmer, Sussex, England.]

Knight, Richard R. EFFECTIVENESS OF NECKBANDS FOR MARKING ELK. J. Wildl. Mgmt. 30(4): 845-846. Oct. 1966. WR 124: 32
[Mont. Fish & Game Dept., Bozeman.] Abstract: Two hundred and nine elk (Cervus canadensis) were marked with neckbands during the winters of 1963-64 and 1964-65 in Montana. Neckbands were constructed from 3-inch-wide strips of plastic impregnated nylon. Symbols and color combinations were used to make each neckband individually recognizable. Relocations on marked animals totaled 1,909 during a 20-month period. Ninety percent of the marked animals were relocated at least once. The combination of easily identified neckbands with reconnaissance by helicopter is an effective means of locating animals in inaccessible areas.

Ladziansky, A. [FEED OF THE HOOFED WILDLIFE FROM THE POINT OF VIEW OF FOREST PROTECTION.] Les (Bratislava) 21(12): 369-375. Dec. 1965. [From Bibliog. Agr. 30(5), 1966. In Czech.] WR 124: 32

Laws, R. M. AGE CRITERIA FOR THE AFRICAN ELEPHANT, LOXODONTA A. AFRICANA. East African Wildl. J. 4: 1-37, 17 figs. Aug. 1966. WR 124: 33
[Nuffield Unit Tropical Animal Ecol., Queen Elizabeth Park, Uganda.] Thirty age groups are described and illustrated, which are related to the progress of eruption and wear of the six teeth in each side of the lower jaw.--From summ.

Lewis, James C. OBSERVATIONS OF PEN-REARED EUROPEAN HOGS RELEASED FOR STOCKING. J. Wildl. Mgmt. 30(4): 832-835. Oct. 1966. WR 124: 33
[Tenn. Game & Fish Comm., Nashville.] Abstract: In May, 1962, 26 pen-reared European hogs (Sus scrofa) were released near Crossville, Tennessee, in an attempt to establish another huntable population. Their behavior created public relations problems. They frequently left the boundary of the wildlife area and Tennessee Game and Fish Commission personnel returned them 22 times. A cruising radius of 1.5 to 2 miles may be typical for young European hogs. The stocking failed to establish a new population, apparently because the released animals were too tame.

Nielson, Errol, and Edson Fichter. PRONGHORN ANTELOPE...THE PLAINS RUNNER. Idaho Wildl. Rev. 19(2): 3-7, illus. Sept.-Oct. 1966. WR 124: 33
Highlights of P.-R. studies of pronghorns in Idaho.

Rashek, Valentina A. [24-HOUR REGIME OF THE ONAGER, EQUUS HEMIONUS ONAGER BODDAERT, AND ITS BEHAVIOUR IN BARSA-KALMES ISLAND (ARAL SEA).] Vestnik Cesk. Spolecnosti Zool. 28(1): 96-104, illus. 1964. [From Biol. Abstr. 47(14), 1966. In Russian with English summ.] WR 124: 33

Rogerson, A. THE UTILISATION OF METABOLISABLE ENERGY BY A WILDEBEEST. East African Wildl. J. 4: 149. Aug. 1966. WR 124: 33
[East African Vet. Res. Organization, P.O. Box 32, Kikuyu, Kenya.]

Schenkel, Rudolf. ON SOCIOLOGY AND BEHAVIOUR IN IMPALA (AEPYCEROS MELAMPUS LICHTENSTEIN). East African Wildl. J. 4: 99-114, 11 figs. Aug. 1966. WR 124: 33
[Univ. College, P.O. Box 30197, Nairobi, Kenya.]

Seki, Kin-ichi. NOTES ON AN EXAMPLE OF COPULATION AND PERIOD OF PREGNANCY OF DICEROS BICORNIS. J. Mammal. Soc. Japan 2(6): 159-162. Jan. 1966. [From J. Mammal. 47(4), 1966. In Japanese.] WR 124: 33

Short, Henry L. METHODS FOR EVALUATING FORAGES FOR WILD RUMINANTS. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 122-128. 1966. WR 124: 33
[Southern Forest Expt. Sta., Nacogdoches, Texas.] The usefulness and applicability of feeding performance experiments, digestion trials, and rumen assays for measuring forage quality and utilization for wild ruminants, especially deer, are evaluated.--Auth. abstr.

Short, R. V. OESTROUS BEHAVIOUR, OVULATION AND THE FORMATION OF THE CORPUS LUTEUM IN THE AFRICAN ELEPHANT, LOXODONTA AFRICANA. East African Wildl. J. 4: 56-68, 5 figs. Aug. 1966. WR 124: 33
[Univ. Cambridge, Cambridge, England.]

Soest, J. van, and C. J. Stefels. [SOME NOTES ON BARK INJURIES BY RED DEER TO TREES.] Ned. Bosbouw Tijdschr. 37(9): 266-273. Sept. 1965. [From Bibliog. Agr. 30(8), 1966. In Dutch.] WR 124: 33

Whicker, F. Ward, Gerald C. Farris, and Adrian H. Dahl. RADIOIODINE IN COLORADO DEER AND ELK THYROIDS DURING 1964-65. J. Wildl. Mgmt. 30(4): 781-785, 1 fig. Oct. 1966. WR 124: 33
[Colo. State Univ., Fort Collins.] Abstract: This paper reports and discusses the levels of radioactive iodine-131 in thyroids of Rocky Mountain mule deer (Odocoileus hemionus) and elk (Cervus canadensis) in Colorado following an underground explosion at the Nevada test site and the Chinese

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tests in 1964 and 1965. Seventy-nine deer thyroids and 11 elk thyroids were obtained from animals collected throughout the 2-year period and quantitatively assayed for ^{131}I. Four significant responses in the ^{131}I concentrations were measured, with three of the peaks being attributed to the two Chinese tests and an underground test at the Nevada test site which reportedly vented. The other response could not be traced to any announced release of radioactivity. Radioiodine levels subsequent to each peak declined with half-times ranging from 8 to 11 days. Integrated thyroid doses calculated for each response ranged from approximately 12 to 254 mrads, which appears far below a dose required to produce thyroid adenomas. The data readily demonstrate the high sensitivity of deer and elk thyroids for environmental monitoring of ^{131}I.

Wilson, Vivian J. PREDATORS OF THE COMMON DUIKER, SYLVICAPRA GRIMMIA, IN EASTERN ZAMBIA. Arnoldia 2(28): 1-8. 30 July 1966. WR 124: 34
[Dept. Natl. Parks & Wild Life Mgmt., Rhodesia.]

Daniel, M. J. EARLY TRIALS WITH SODIUM MONOFLUOROACETATE (COMPOUND 1080) FOR THE CONTROL OF INTRODUCED DEER IN NEW ZEALAND. Forest Res. Inst. New Zealand Forest Serv. Tech. Pap. no. 51. 27 p., 3 figs. + 4 pls. 1966. WR 124: 34
[DSIR, Lower Hutt, New Zealand.] More than 100 baiting and poison trials using sodium monofluoroacetate (compound 1080), carried out by the New Zealand Forest Service from 1957 to 1961 on fallow, red, and sika deer, are described in some detail. These trials indicate that large concentrations of deer on open clearings and in forest edges can be effectively reduced by the use of 1080 in carrot bait. It appears unlikely at this stage, however, that this technique will supersede hunting as an economic method of deer control in most of New Zealand.--From synopsis.

DEER (Odocoileus)

David, Jerry A. REPRODUCTION OF THE CASSIA DEER HERD IN IDAHO. M.S. thesis, Univ. Idaho. 60 p., multilith. 1966. WR 124: 34
Courtesy/ Paul D. Dalke.

Gladfelter, H. Lee. NOCTURNAL BEHAVIOR OF WHITE-TAILED DEER IN THE HATTER CREEK ENCLOSURE. M.S. thesis, Univ. Idaho. 63 p., multilith. 1966. WR 124: 34
Courtesy/ Paul D. Dalke.

Haygood, John L. WHERE ARE THE DEER IN LOUISIANA? La. Conservationist 18 (9&10): 8-10, illus. Sept.-Oct. 1966. WR 124: 34
Deerkill, hunters, and forest acres by parishes of the La. 1965-66 deer season.

Marburger, Rodney G., R. M. Robinson, and Jack Ward Thomas. A PSEUDO-HERMAPHRODITIC WHITE-TAILED DEER. J. Mammal. 47(4): 711-712, 1 fig. Nov. 1966. WR 124: 34
[Texas Parks & Wildl. Dept., Kerrville.]

McCulloch, Clay. PINYON-JUNIPER CONTROL AND DEER. Wildl. Views (Ariz.) 13 (2): 10-13, illus. Mar.-Apr. 1966. WR 124: 34
"'Type conversion'--from one to another--of various kinds of natural vegetation is much in demand for improving water and livestock production and for fire protection. For deer of the pinyon-juniper areas, conversion effects can be neutral, harmful or beneficial. It depends largely on the intensity and extent of the tree removal efforts and, therefore, on degrees to which some of the other land use needs can be adjusted to deer needs."

McNeil, Richard Jerome. POPULATION DYNAMICS AND ECONOMIC IMPACT OF DEER IN SOUTHERN MICHIGAN. Ph.D. thesis, Univ. Mich. 191 p. 1963. [From Dissertation Abstr. 24(2), 1963.] WR 124: 35

Murphy, Dean A., and J. A. Coates. EFFECTS OF DIETARY PROTEIN ON DEER. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 129-139. 1966. WR 124: 35
[Mo. Dept. Conserv., Columbia.] This study measured the effects of three levels of dietary protein on productivity of female white-tailed deer and on growth and development of fawns produced. Productivity, survival and condition of breeding does were adversely affected by reduction of crude protein in the diet to 7 and 11 percent. Post-partum survival of fawns was reduced by low levels of dietary proteins. Physical development of fawns was retarded by reduction of protein in the diet. Body weight and chest girth were affected more than was hind foot. Body weight and antler development of males were drastically retarded by a diet containing 7 percent crude protein.--D. A. Murphy.

Rees, John W., Robert A. Kainer, and Robert W. Davis. HISTOLOGY, EMBRYOLOGY AND GROSS MORPHOLOGY OF THE MANDIBULAR DENTITION IN MULE DEER. J. Mammal. 47 (4): 640-654, 18 figs. Nov. 1966. WR 124: 35
[Univ. Chicago, Chicago, Ill.]

Rubelmann, Robert. MARYLAND DEER REPORT 1965. Md. Conservationist 43(2): 1A-8A. Apr. 1966. WR 124: 35
Insert in this issue. Breakdown by type of season for counties with a 5-year comparative analysis of harvest (1961-1965).

Stiteler, William M., Jr., and Samuel P. Shaw. USE OF WOODY BROWSE BY WHITETAIL DEER IN HEAVILY FORESTED AREAS OF NORTHEASTERN UNITED STATES. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 205-212. 1966. WR 124: 35
[U.S. Forest Serv., 6816 Market St., Upper Darby, Pa.] Production and utilization of woody browse were measured on 2,000 permanent transects systematically located on 32 Ranger Districts. This paper points out the relative importance of different species of woody plants to whitetail deer and assesses the role of browse in the year-round diet. Results of these surveys show that a relatively few species made up the bulk of the twigs eaten on any particular National Forest and most often these were species of little or no commercial value from the standpoint of timber production. The 32 species and species groups that comprised 1.0 percent or more of the total supply of twigs fell into three evenly divided palatability classes. The concept that browse is the principal food of whitetail deer in the Northeast is open to serious question.--William M. Stiteler, Jr.

Weber, Andrew J. REGIONAL DIFFERENCES IN FAWNING TIMES OF NORTH CAROLINA DEER. J. Wildl. Mgmt. 30(4): 843-845. Oct. 1966. WR 124: 35
[N.C. Wildl. Resources Comm., Raleigh.] Abstract: This paper reports on a study of the ages of 345 fawn white-tailed deer (Odocoileus virginianus) from three physiographic regions in North Carolina. The ages were determined by the replacement pattern of the central pair of incisors. Age groups were partitioned by physiographic region. These data indicate that the rut and the peak of fawning occur approximately 1 month earlier in the Coastal Plain than in the Piedmont or Mountains.

Wilhelm, A. R., and D. O. Trainer. A SEROLOGICAL STUDY OF EPIZOOTIC HEMORRHAGIC DISEASE OF DEER. J. Wildl. Mgmt. 30(4): 777-780. Oct. 1966. WR 124: 35
[Univ. Wis., Madison.] Abstract: A serological study of epizootic hemorrhagic disease (EHD) of white-tailed deer (Odocoileus virginianus) was conducted for five distinct geographical areas of North America, using serum neutralization tests to determine the immune response of herds. Few or no reactors were found among deer from Michigan, Iowa, and Wisconsin. A moderate number was found among deer from Nebraska, and a large number of reactors was found in Texas deer. The relationship of the serological results to the history of EHD in each area and the epizootiology of the disease are discussed.

MAMMALS--MARINE

Jarman, P. J. THE STATUS OF THE DUGONG (DUGONG DUGON MÜLLER); KENYA, 1961. East African Wildl. J. 4: 82-88, 1 fig. Aug. 1966. WR 124: 36
[Nuffield Kariba Res. Sta., c/o District Commissioner, Kariba, Rhodesia.]

Lyons, Eugene Thomas. BIOLOGY OF THE HOOKWORM UNCINARIA LUCASI STILES, 1901, IN THE NORTHERN FUR SEAL, CALLORHINUS URSINUS LINN. ON THE PRIBILOF ISLANDS, ALASKA. Ph.D. thesis, Colo. State Univ. 109 p. 1963. [From Dissertation Abstr. 24(8), 1964.] WR 124: 36

Medway, W., and F. Moldovan. BLOOD STUDIES ON THE NORTH ATLANTIC PILOT (POTHEAD) WHALE, GLOBICEPHALA MELAENA (TRAILL, 1809). Physiol. Zool. 39(2): 110-116. Apr. 1966. [From J. Mammal. 47(4), 1966.] WR 124: 36

Medway, W., H. F. Schryver, and Bruce Bell. CLINICAL JAUNDICE IN A DOLPHIN. J. Am. Vet. Med. Assoc. 149(7): 891-895, 3 figs. 1 Oct. 1966. WR 124: 36

Nishiwaki, M. WHALES AND PINNIPEDS. Univ. Tokyo Press 18 + 439 p. 1965. [From J. Mammal. 47(4), 1966. In Japanese.] WR 124: 36

Schevill, William E. APPLICATION OF SATELLITES OR HIGH-FLYING AIRCRAFT TO STUDIES OF CETACEANS AND OTHER LARGE MARINE ANIMALS. In: (Proceedings of the Conference on the feasibility of conducting oceanographic explorations from aircraft, manned orbital and lunar laboratories: Oceanography from space, Woods Hole, Mass., 24-28 Aug. 1964.) (Woods Hole). p. 177-178. 1965. [From Biol. Abstr. 47(11), 1966.] WR 124: 36
[Museum Comp. Zool., Harvard Univ., Cambridge, Mass.]

MAMMALS--OTHER GROUPS

Kirkpatrick, T. H. STUDIES OF MACROPODIDAE IN QUEENSLAND. I. FOOD PREFERENCES OF THE GREY KANGAROO (MACROPUS MAJOR SHAW). Queensland J. Agr. Animal Sci. 22(1): 89-93, illus. 1965. [From Biol. Abstr. 47(14), 1966.] WR 124: 36
[Div. Plant Ind., Queensland Dep. Primary Ind., Brisbane, Queensland, Australia.]

Kirkpatrick, T. H. STUDIES OF MACROPODIDAE IN QUEENSLAND. 2: AGE ESTIMATION IN THE GREY KANGAROO, THE RED KANGAROO, THE EASTERN WALLAROO AND THE RED-NECKED WALLABY, WITH NOTES ON DENTAL ABNORMALITIES. Queensland J. Agr. Animal Sci. 22(3): 301-317, illus. 1965. [From Biol. Abstr. 47(14), 1966.] WR 124: 36
[Div. Plant Ind., Queensland Dep. Primary Ind., Brisbane, Queensland, Australia.]

Stodard, Eleanor. OBSERVATIONS ON THE BEHAVIOUR OF THE MARSUPIAL BETTONGIA LESUEURI (QUOY & GAIMARD) IN AN ENCLOSURE. CSIRO Wildl. Res. 11(1): 91-101, 4 figs. Oct. 1966. WR 124: 36
[CSIRO, Canberra, Australia.] The main behavior patterns and postures are described, including locomotion, resting, grooming, feeding, digging, hay-gathering, aggression, defense and sexual behavior.--From summ.

Van Deusen, Hobart M., and Kent Keith. RANGE AND HABITAT OF THE BANDICOOT, ECHYMIPERA CLARA, IN NEW GUINEA. J. Mammal. 47(4): 721-723, 1 fig. Nov. 1966. WR 124: 36
[Am. Museum Nat. Hist., New York, N.Y.]

BIRDS--GENERAL

Clapp, Roger B., and Fred C. Sibley. LONGEVITY RECORDS OF SOME CENTRAL PACIFIC SEABIRDS. Bird-Banding 37(3): 193-197. July 1966. WR 124: 37
[Smithsonian Inst., Washington, D.C.] Longevity records for Laysan albatross (Diomedea immutabilis), red-tailed tropicbird (Phaethon rubricauda), blue-faced booby (Sula dactylatra), red-footed booby (Sula sula), and sooty tern (Sterna fuscata).--Courtesy/ Paul A. Stewart.

Crist, Burnell A. PREFERENCES FOR FOOD BY BIRDS AT A WINTER FEEDING STATION. Wilson Bull. 78(2): 233-234. June 1966. WR 124: 37
[Pa. State Univ., University Park.] Comparisons are made of the relative use of four common foods by six different species of birds.--Courtesy/ Paul A. Stewart.

Moreau, R. E. ON ESTIMATES OF THE PAST NUMBERS AND OF THE AVERAGE LONGEVITY OF AVIAN SPECIES. Auk 83(3): 403-415. July 1966. WR 124: 37
[Edward Grey Inst. Field Ornithol., Botanic Garden, Oxford, England.] States disagreement with the method used and the results obtained in an earlier paper on the same subject by P. Brodkorb (Bull. Fla. State Mus. Biol. Sci. 5(3): 41-53. 1960.).--Courtesy/ Paul A. Stewart.

Pennie, Ian D. ORNITHOLOGY IN SCOTLAND. A HISTORICAL REVIEW. Scottish Birds 4(2): 126-142. Summer 1966. WR 124: 37

Wagner, Richard H., and Timothy G. Marples. THE BREEDING SUCCESS OF VARIOUS PASSERINE BIRDS UNDER CHRONIC GAMMA IRRADIATION STRESS. Auk 83(3): 437-440. July 1966. WR 124: 37
[Pa. State Univ., University Park.] "It seems likely that the LD100 for the eggs of wild passerines is between 500 and 1,000 R at a dose rate up to 50 R/day and that the LD100 for adults may be as high as 2,000 R at a dose rate of up to 150 R/day.--Courtesy/ Paul A. Stewart.

Warham, John, W. R. P. Bourne, and H. F. I. Elliott. ALBATROSS IDENTIFICATION IN THE NORTH ATLANTIC. British Birds 59(9): 376-384, 2 figs. + 8 pls. Sept. 1966. WR 124: 37

Winterbottom, J. M. AVIFAUNAL RELATIONSHIPS BETWEEN THE NEOTROPICAL AND ETHIOPIAN REGIONS. Hornero 10: 209-214. 1965. [From Auk 83(3), 1966.] WR 124: 37
Species found in both Africa and South America. Aside from those of cosmopolitan distribution and some sea birds, they consist chiefly of ducks and herons.

BIRDS--TECHNIQUES

Coppinger, Raymond P., and Bernard C. Wentworth. IDENTIFICATION OF EXPERIMENTAL BIRDS WITH THE AID OF FEATHER AUTOGRAFTS. Bird-Banding 37(3): 203-205, 1 fig. July 1966. WR 124: 37
[Amherst Coll., Amherst, Mass.] The pollex was excised from gull chicks and grafted on their crowns. The operation required about one minute and formed a permanent marker.--Courtesy/ Paul A. Stewart.

Emlen, Stephen T., and John T. Emlen. A TECHNIQUE FOR RECORDING MIGRATORY ORIENTATION OF CAPTIVE BIRDS. Auk 83(3): 361-367, 4 figs. July 1966. WR 124: 37
[Univ. Mich., Ann Arbor.] Summary: A simple, inexpensive technique is described for obtaining data on oriented Zugunruhe in captive migrants. Test birds are placed in small, wide-mouthed funnels of white blotting paper mounted over moist ink pads and topped with screen covers. Each time a bird hops, it leaves inked footprints on the sloping blotting paper in the direction of the hop before sliding back down to the pad. The footprint records on the blotters then can be translated into numerical terms suitable for statistical evaluation. --Courtesy/ Paul A. Stewart.

Franks, Edwin C. A SIMPLE TECHNIQUE FOR HOLLOW METAL EGG CONSTRUCTION. Auk 83(3): 468-469, 1 fig. July 1966. WR 124: 38

[Pa. State Univ., University Park.] Natural eggs were blown and copper plated. Plating was done at a cost of about $5.00 per egg by a commercial firm specializing in silverware plating and baby-shoe bronzing.--Courtesy/ Paul A. Stewart.

Hungerford, David A., Robert L. Snyder, and John A. Griswold. CHROMOSOME ANALYSIS AND SEX IDENTIFICATION IN THE MANAGEMENT AND CONSERVATION OF BIRDS. J. Wildl. Mgmt. 30(4): 707-712, 2 figs. Oct. 1966. WR 124: 38

[Inst. Cancer Res., Fox Chase, Philadelphia, Pa.] Abstract: Identification of sex by chromosome analysis is possible with the use of cultures of avian whole blood. Difficulties in sex identification in the many species of birds that lack other suitable phenotypical sex dimorphism can thus be relatively easily overcome. The sex chromosome complements of the wood duck (Aix sponsa), a species easily sexed otherwise, and of the Stanley crane (Anthropoides paradisea), a species not easily sexed, are described. The further application of this technique to the management of various captive birds is suggested, and the possible value of such application to the conservation of species such as the whooping crane (Grus americana) is pointed out.

Kuck, Thomas L. AN IMPROVED BATTERY HOOKUP FOR RADIO-TELEMETRY STUDIES. J. Wildl. Mgmt. 30(4): 858-859, 1 fig. Oct. 1966. WR 124: 38

[S. Dak. Univ., Brookings.] Abstract: A convenient method of battery hookup was developed for use in a radio-telemetry system. It consists of a plastic bottle which tightly holds electrical leads in contact with the ends of the battery. This new technique allows quick changes of batteries and rapid hookup in the field and eliminates soldering the battery to a lead. This hookup adds only 3 grams to the total weight of the transmitter-battery package and has in no way hindered wild pheasants during mating and nesting. Materials used for the hookup are readily obtainable in hardware stores.

Peek, James M. CHLORDIAZEPOXIDE AND PENTOBARBITAL AS TRANQUILIZERS FOR COWBIRDS AND COTURNIX QUAIL. J. Am. Vet. Med. Assoc. 149(7): 950-952. 1 Oct. 1966. WR 124: 38

[Porcupine Game Range, Gallatin Gateway, Mont.] Summary: The effects of ad libitum ingestion of chlordiazepoxide and sodium pentobarbital on panned cowbirds and coturnix quail were compared. The agents were incorporated into feed and offered to individually marked birds. Individual response to each agent appeared to relate more to the quantity of food ingested than to the percentage by weight of agent in the food. Response of both species to chlordiazepoxide was similar at the 15% dose despite weight differences of the birds. Responses were too variable to demonstrate significant differences when sodium pentobarbital at the 10% dose was given to both species. No deaths occurred among birds given chlordiazepoxide, whereas 4 quail and 1 cowbird died from sodium pentobarbital ingestion.

Penney, R. L., and W. J. L. Sladen. THE USE OF TEFLON FOR BANDING PENGUINS. J. Wildl. Mgmt. 30(4): 847-850, 1 fig. Oct. 1966. WR 124: 38

[Inst. Res. Animal Behavior, N.Y. Zool. Soc., N.Y.] Abstract: The permanent flipper-banding of long-lived penguins with metal bands has presented two problems: slight plumage wear, and band loss due to metal fatigue. In 1964 and 1965 FEP Fluorocarbon plastic (Teflon) was used in the design, production, and testing of bands for emperor (Aptenodytes forsteri) and Adelie penguins (Pygoscelis adeliae) at Cape Crozier, Antarctica. Serial numbers and letters on metal strips were laminated between two layers of Teflon for individual identification of birds. The bands were preshaped to fit the form of the flippers and were attached with stainless steel rivets and washers by a special pair of pliers. Recoveries after 1 year of banding indicate that Teflon bands are superior to metallic bands on penguins and that this material will prove useful in the permanent marking of other birds and animals.

Phillips, Allan R., Marshall A. Howe, and Wesley E. Lanyon. IDENTIFICATION OF THE FLYCATCHERS OF EASTERN NORTH AMERICA, WITH SPECIAL EMPHASIS ON THE GENUS EMPIDONAX. Bird-Banding 37(3): 153-171, 2 figs. July 1966. WR 124: 39

[Inst. Biol., Universidad Nacional Autónoma de México, México, D.F., México.] "The key emphasizes characters visible in the living bird but not often mentioned in the literature, such as color of mouth lining, and also considers the times and places where certain species are not to be expected. Its use requires no more than an accurate caliper and a millimeter ruler. With these aids, and a careful reading of all the characters, we believe that 98 per cent or more of all the full-grown birds netted can be readily keyed out, even in the difficult genus Empidonax."--Courtesy/ Paul A. Stewart.

Sussman, Oscar, Raymond E. Kerlin, William C. Carter, Jeff Swinebroad, and Martin Goldfield. ECOLOGY OF ARBOVIRUS INFECTION IN NEW JERSEY / REVIEW OF A 5-YEAR MIST-NETTING PROGRAM. Bird-Banding 37(3): 183-190. July 1966. WR 124: 39

[N.J. State Dept. Health, Trenton.] Report of mist-netting and banding 25,238 birds of 120 spp. Blood samples were taken from all birds, and resulting data will be analyzed and presented elsewhere.--Courtesy/ Paul A. Stewart.

Tenaza, Richard R. A METHOD FOR TRAPPING CORMORANTS. Bird-Banding 37(3): 207-208. July 1966. WR 124: 39

[San Francisco State Coll., San Francisco, Calif.] Nineteen pelagic cormorants (Phalacrocorax pelagicus) were captured in Oneida Victor No. 1 steel traps. The trap jaws were padded with a one-half-inch-thick wrapping of masking tape, and the birds were captured without injury.--Courtesy/ Paul A. Stewart.

van Tets, G. F. A PHOTOGRAPHIC METHOD OF ESTIMATING DENSITIES OF BIRD FLOCKS IN FLIGHT. CSIRO Wildl. Res. 11(1): 103-110, 3 figs. Oct. 1966. WR 124: 39

[CSIRO, Canberra, Australia.] Summary: Densities of bird flocks in flight were calculated from photographs for 60 species which ranged in size from 35.3 lb mute swans to 0.046 lb cliff swallows. An average density of 37 lb per 1000 cu ft of airspace with a standard error of 13 lb per 1000 cu ft was found. The flock densities were found to be inversely related to a "gangliness" factor expressed as the cube of the total length divided by the weight of a bird.

BIRDS--MORPHOLOGY & PHYSIOLOGY

Chaney, Stephen G., and Morley R. Kare. EMESIS IN BIRDS. J. Am. Vet. Med. Assoc. 149(7): 938-943, 1 fig. 1 Oct. 1966. WR 124: 39

[N.C. State Univ., Raleigh.] Summary: Comparative studies of emesis in the herring gull, pigeon, chicken, and cowbird were conducted, using orally administered copper sulfate and intravenously administered copper sulfate, hydergine, apomorphine, and lanatoside C. A response to every emetic was elicited from some birds. However, the individual and species differences among the birds were as great as those among mammals. Further, the response of the avian species studied did not indicate that any of them could be used to predict how a specific mammal would react. The differences in response to the emetics by the birds do not offer any simple pattern related to feeding behavior.

Douglas, Donald Sterling. SALT AND WATER METABOLISM OF THE ADELIE PENGUIN. Ph.D. thesis, Duke Univ. 121 p. 1963. [From Dissertation Abstr. 24(1), 1963.] WR 124: 39

Dowsett, R. J. THE MOULTING PATTERN OF EUROPEAN SWALLOWS, HIRUNDO RUSTICA, WINTERING IN EASTERN ZAMBIA. Puku 4: 91-100. 1966. WR 124: 39

Evans, P. R. AUTUMN MOVEMENTS, MOULT AND MEASUREMENTS OF THE LESSER REDPOLL CARDUELIS FLAMMEA CABARET. Ibis 108(2): 183-216, 13 figs. Apr. 1966. WR 124: 40
[Edward Grey Inst., Oxford, England.]

Hendrickson, Herbert T. A COMPARATIVE STUDY OF THE EGG WHITE PROTEINS OF SOME SPECIES OF THE AVIAN ORDER GRUIFORMES. Ph.D. thesis, Cornell Univ. 94 p. 1966. [From Dissertation Abstr. 27(4B), 1966.] WR 124: 40

King, James R., and Donald S. Farner. THE ADAPTIVE ROLE OF WINTER FATTENING IN THE WHITE-CROWNED SPARROW WITH COMMENTS ON ITS REGULATION. Am. Nat. 100 (914): 403-418, 4 figs. Sept.-Oct. 1966. WR 124: 40
[Wash. State Univ., Pullman.]

King, James R., Brian K. Follett, Donald S. Farner, and Martin L. Morton. ANNUAL GONADAL CYCLES AND PITUITARY GONADOTROPINS IN ZONOTRICHIA LEUCOPHRYS GAMBELII. Condor 68(5): 476-487, 2 figs. Sept.-Oct. 1966. WR 124: 40
[Wash. State Univ., Pullman.] Courtesy/ Paul A. Stewart.

Lasiewski, Robert Constanti. PHYSIOLOGICAL RESPONSES TO TEMPERATURE IN HUMMINGBIRDS. Ph.D. thesis, Univ. Mich. 98 p. 1962. [From Dissertation Abstr. 23(9), 1963.] WR 124: 40

MacMillen, Richard E., and John C. Snelling. WATER ECONOMY OF THE WHITE-CROWNED SPARROW AND ITS USE OF SALINE WATER. Condor 68(4): 388-395, 3 figs. July-Aug. 1966. WR 124: 40
[Pomona Coll., Claremont, Calif.] White-crowned sparrows (Zonotrichia leucophrys gambelii) selected the least concentrated of saline solutions and lost weight on hypertonic saline solutions. Birds deprived of water lost weight at the rate of 9% of initial body weight per day and survived a maximum of seven days.--Courtesy/ Paul A. Stewart.

Nagra, Clarence Lawrence. RELATION BETWEEN STRESS, ENERGY REQUIREMENTS AND STEROIDAL HORMONES IN BIRDS. Ph.D. thesis, Univ. Wis. 130 p. 1963. [From Dissertation Abstr. 23(11), 1963.] WR 124: 40
"Phasianus colchichus."

Smyth, Michael, and George A. Bartholomew. THE WATER ECONOMY OF THE BLACK-THROATED SPARROW AND THE ROCK WREN. Condor 68(5): 447-458, 7 figs. Sept.-Oct. 1966. WR 124: 40
[Univ. Adelaide, Adelaide, South Australia.] Black-throated sparrows (Amphispiza bilineata) drank water daily equivalent to 30% of their body weight when water was available but survived indefinitely when water was not available. Birds maintained their body weights when drinking NaCl solutions of 0.4 M but lost weight drinking solutions of 0.5 M. When drinking water was withheld, the water content of the excreta of black-throated sparrows, which is normally about 81%, decreased to 57%. Their insectivorus habits and habitat preferences enables rock wrens (Salpinctes obsoletus) to survive in the desert without any physiological adjustment.--Courtesy/ Paul A. Stewart.

Zimmerman, John Lester. THE BIOENERGETICS OF THE DICKCISSEL, SPIZA AMERICANA. Ph.D. thesis, Univ. Ill. 146 p. 1963. [From Dissertation Abstr. 24(10), 1964.] WR 124: 40
See WR 120: 70.

Andrews, Edith. CEDAR WAXWING RESPONSE TO MIRROR. Bird-Banding 37(3): 205-206. July 1966. WR 124: 41

[Quaise, Nantucket, Mass.] A captive Bombycilla cedrorum showed interest in its mirrored reflection: "it sidled up to it, 'talked' or 'sang' to it, nudged it, 'danced' in front of it, raised and lowered its crest and at times literally shrieked at the mirror which suggested to me the calling together of the flock."--Courtesy/ Paul A. Stewart.

Andrews, Edith. SLATE-COLORED JUNCO RESPONSE TO MIRROR. Bird-Banding 37 (3): 206. July 1966. WR 124: 41

[Quaise, Nantucket, Mass.] The mirror in the cage has a "quieting effect" on a slate-colored junco (Junco hyemalis) being held captive.--Courtesy/ Paul A. Stewart.

Attwell, R. I. G. OXPECKERS, AND THEIR ASSOCIATIONS WITH MAMMALS IN ZAMBIA. Puku 4: 17-48, 1 map, 4 pls. 1966. WR 124: 41

Berger, Andrew J. THE NESTLING PERIOD OF THE GREAT CRESTED FLYCATCHER. Wilson Bull. 78(3): 320. Sept. 1966. WR 124: 41

[Univ. Hawaii, Honolulu.] Young left their nests when 14 and 15 days old.--Courtesy/ Paul A. Stewart.

Davis, Peter. THE GREAT IMMIGRATION OF EARLY SEPTEMBER 1965. British Birds 59(9): 353-376, 2 figs. Sept. 1966. WR 124: 41

A fall of north European summer migrants on the east-facing coast of Suffolk and Norfolk on 3rd September 1965 was by far the largest of its kind ever recorded in Britain. Considerable numbers of migrants also appeared further north along the east coast about the same time, and large arrivals were reported from Vlieland (Netherlands) and Heligoland (Germany). The most abundant of the birds concerned were wheatears Oenanthe oenanthe, whinchats Saxicola rubetra, redstarts Phoenicurus phoenicurus, garden warblers Sylvia borin, willow warblers Phylloscopus trochilus and pied flycatchers Ficedula hypoleuca; but over 70 others were also involved. Wrynecks Jynx torquilla and bluethroats Luscinia svecica were exceptionally numerous.--From summ.

Delius, J. D. DAS VERHALTEN DER FIELDLERCHE. [THE BEHAVIOR OF THE SKYLARK.] Z. Tierpsychol. 20: 297-348. 1963. [From Auk 83(3), 1966. In German.] WR 124: 41

A discussion of territory, homing, song (three types), call notes, agonistic displays, courtship, mobbing, and parental care in Alauda arvensis based on four seasons of observation in England.

Dücker, G. SPONTANE BEVORZUGUNG ARTEIGENER FARBEN BEI VÖGELN. [SPONTANEOUS PREFERENCE OF CHARACTERISTIC COLORS BY BIRDS.] Z. Tierpsychol. 20: 43-65. 1963. [From Auk 83(3), 1966. In German.] WR 124: 41

For 11 species of birds of different families, tested as to whether or not they preferred colors like their own plumage, those in which sexes were alike preferred their own colors and those in which sexes differed showed sexual differences in color preference.

Dunham, David W. REACTION TO PREDATORS IN THE ROSE-BREASTED GROSBEAK. Wilson Bull. 78(3): 279-282, 1 fig. Sept. 1966. WR 124: 41

[Zool. Lab., Rijksuniv., Leiden, Nederland.] On agonistic behavior of Pheucticus ludovicianus.--Courtesy/ Paul A. Stewart.

Enright, J. T. INFLUENCES OF SEASONAL FACTORS ON THE ACTIVITY ONSET OF THE HOUSE FINCH. Ecology 47(4): 662-666, 3 figs. Summer 1966. WR 124: 41

[Univ. Calif., Los Angeles.] Abstract: In laboratory experiments, cold environmental temperature (2°C) caused male house finches to awaken later, relative to "dawn," than warm temperatures (20°C) when day lengths (hours of light per cycle) were held constant. When temperature was held constant, greater day lengths also caused later awakening relative to "dawn." Extrapolation of these observations to field conditions suggests that seasonal changes

in average temperature and day length may exert opposite influences on awakening time: the long days of spring would induce minimal "anticipation" of dawn, while the warmer temperatures would tend to counteract this influence. Additional circumstantial evidence suggests that reproductive maturity may also cause earlier awakening, relative to dawn, day length and temperature held constant.--Courtesy/ Paul A. Stewart.

Ficken, Millicent S., and Robert W. Ficken. NOTES ON MATE AND HABITAT SELECTION IN THE YELLOW WARBLER. Wilson Bull. 78(2): 232-233. June 1966. WR 124: 42

[Univ. Md., College Park.] Male yellow warblers (Dendroica petechia) selected territories with and without low shrubbery. Males with low shubbery in their territories were first to obtain mates.--Courtesy/ Paul A. Stewart.

Grant, P. R. THE COEXISTENCE OF TWO WREN SPECIES OF THE GENUS THRYOTHORUS. Wilson Bull. 78(3): 266-278, 4 figs. Sept. 1966. WR 124: 42

[McGill Univ., Montreal, Quebec, Canada.] Courtesy/ Paul A. Stewart.

Grant, P. R. ECOLOGICAL COMPATIBILITY OF BIRD SPECIES ON ISLANDS. Am. Nat. 100(914): 451-462, 2 figs. Sept.-Oct. 1966. WR 124: 42

[McGill Univ., Montreal, Quebec.] Summary: The difficulties of coexistence on islands for ecologically similar species of birds are indicated by the paucity of homogeneric species, and by the tendency for their bill lengths, and hence their feeding characteristics, to diverge. Members of the most similar pair of homogeneric species on the Tres Marías Islands differ in bill length by 21%. This is greater than the difference between members of 12 out of a total of 14 mainland pairs which are each represented by one species only on the islands. It is suggested that in some instances both members of the mainland homogeneric pairs have reached the islands, but that one member has been eliminated due to interactions arising from mutual ecological incompatibility. It is further suggested that this process has been important in the adjustment of number of species to island area.

Hatch, Jeremy J. COLLECTIVE TERRITORIES IN GALÁPAGOS MOCKINGBIRDS, WITH NOTES ON OTHER BEHAVIOR. Wilson Bull. 78(2): 198-207, 2 figs. June 1966. WR 124: 42

[Duke Univ., Durham, N.C.] Groups of 4-10 Galápagos mockingbirds (Nesomimus macdonaldi) occupied territories which they defended against neighboring groups with a "dance" similar to that of Mimus polyglottos. A hierarchy was observed within the groups.--Courtesy/ Paul A. Stewart.

Haverschmidt, F. THE MIGRATION AND WINTERING OF THE UPLAND PLOVER IN SURINAM. Wilson Bull. 78(3): 319-320. Sept. 1966. WR 124: 42

[P.O. Box 644, Paramaribo, Surinam.] Observations on Bartramia longicauda.--Courtesy/ Paul A. Stewart.

Hespenheide, Henry A. THE SELECTION OF SEED SIZE BY FINCHES. Wilson Bull. 78(2): 191-197, 2 figs. June 1966. WR 124: 42

[Univ. Pa., Philadelphia.] Slate-colored juncoes (Junco hyemalis) have relatively smaller bills than white-throated sparrows (Zonotrichia albicollis) and selected relatively smaller seeds.--Courtesy/ Paul A. Stewart.

Höhn, E. O. RINGING (BANDING) AND RECOVERIES OF PHALAROPES / A SUMMARY OF PRESENTLY AVAILABLE INFORMATION. Bird-Banding 37(3): 197-200. July 1966. WR 124: 42

[Univ. Alberta, Edmonton, Canada.] Totals of phalaropes banded in different countries.--Courtesy/ Paul A. Stewart.

Johnston, David W. A REVIEW OF THE VERNAL FAT DEPOSITION PICTURE IN OVERLAND MIGRANT BIRDS. PART I: THE WHITE-THROATED SPARROW AT THE SOUTHERN EDGE OF ITS WINTERING RANGE. Bird-Banding 37(3): 172-183. July 1966. WR 124: 43

[Univ. Fla., Gainesville.] The white-throated sparrow leaves Fla. with only about 1.2 g of fat, enough fuel to sustain a continuous flight of about 90 miles. Evidently northward movements are started with short flights. Fat is accumulated as the birds migrate northward.--Courtesy/ Paul A. Stewart.

Kilham, Lawrence. REPRODUCTIVE BEHAVIOR OF HAIRY WOODPECKERS. I. PAIR FORMATION AND COURTSHIP. Wilson Bull. 78(3): 251-265, 3 figs. Sept. 1966. WR 124: 43

[Dartmouth Med. School, Hanover, N.H.] Summary: Observations on hairy woodpeckers indicate that the breeding season begins in January when the male starts coming to the female's territory, in which nesting eventually takes place after nearly 3 months of preliminary courtship. Courtship activities vary in extent and pattern from pair to pair. The basic forms are precopulatory behavior, intimate notes, display flights, duets of drumming, and tapping before symbolic or potential nest sites, in all of which the female often takes the lead. As nest holes near completion in late April, males take the lead in copulatory behavior, often drumming to attract their mates. Two pairs of hairy woodpeckers which nested in adjacent territories in 1964 and 1965 are described in detail to bring out differences in behavior which may occur among individuals. A final discussion centers on the comparative behavior of woodpeckers.--Courtesy/ Paul A. Stewart.

Mayfield, Harold. FIRE IN BIRDS' NESTS. Wilson Bull. 78(2): 234-235. June 1966. WR 124: 43

[River Road, Waterville, Ohio.] Burning nests of a starling (Sturnus vulgaris) and a house sparrow (Passer domesticus) were reported. It appeared that smoldering objects had been carried by the adult birds to the nests.--Courtesy/ Paul A. Stewart.

Meyerriecks, Andrew J. ADDITIONAL OBSERVATIONS ON "FOOT-STIRRING" FEEDING BEHAVIOR IN HERONS. Auk 83(3): 471-472. July 1966. WR 124: 43

[Univ. South Fla., Tampa.] Courtesy/ Paul A. Stewart.

Murray, Bertram G., Jr. MIGRATION OF AGE AND SEX CLASSES OF PASSERINES ON THE ATLANTIC COAST IN AUTUMN. Auk 83(3): 352-360. July 1966. WR 124: 43

[Univ. Mich. Museum Zool., Ann Arbor.] Examination of several thousand mist-netted birds during autumn, 1963, indicated that adults and immatures were migrating at the same time.--Courtesy/ Paul A. Stewart.

Nelson, J. B. THE BEHAVIOUR OF THE YOUNG GANNET. British Birds 59(10): 393-419, 12 figs. + 4 pls. Oct. 1966. WR 124: 43

A sequel to two 1965 papers [WR 119: 46 and WR 119: 47]. A description of the behavior of Sula bassana from hatching to independence, and various aspects of its relationship with its parents and other adults.--From summ.

Olrog, C. C. DIFERENCIAS EN EL CICLO SEXUAL DE ALGUNAS AVES. [DIFFERENCES IN THE SEXUAL CYCLE OF SOME BIRDS.] Hornero 10: 269-272. 1965. [From Auk 83(3), 1966. In Spanish with English summ.] WR 124: 43

In a flooded area in Santiago del Estero, northwestern Argentina, a number of water birds breed in the southern hemisphere autumn, although elsewhere in the country these species breed in spring and summer. This unusual breeding cycle is thought to reflect an extremely abundant food supply of fish and batrachians concentrated as flood waters dry, when the birds have nestlings. The population which breeds into the winter appears to spend the summer in the same region where the populations which breed in spring and summer regularly spend the winter.

Preston, F. W. THE MATHEMATICAL REPRESENTATION OF MIGRATION. Ecology 47 (3): 374-392, 17 figs. Late Spring 1966. WR 124: 44
[Preston Labs., Meridian Res. Center, Box 49, Meridian Sta., Butler, Pa.] Courtesy/ Paul A. Stewart.

Radabaugh, Bruce E., Floyd E. Radabaugh, and Clarice A. Radabaugh. RETURNS OF KIRTLAND'S WARBLERS BANDED AS NESTLINGS. Wilson Bull. 78(3): 322. Sept. 1966. WR 124: 44
[1208 E. 12-Mile Road, Royal Oak, Mich.] Five recoveries of banded Dendroica kirtlandii from the breeding range of the species are listed.--Courtesy/ Paul A. Stewart.

Snow, Barbara K. OBSERVATIONS ON THE BEHAVIOUR AND ECOLOGY OF THE FLIGHTLESS CORMORANT NANNOPTERUM HARRISI. Ibis 108(2): 265-280, 3 figs. + 1 pl. Apr. 1966. WR 124: 44
[British Trust for Ornithol., Beech Grove, Tring, Hertfordshire, England.] General ecology, size and plumage, courtship behavior and breeding of Nannopterum harrisi of the Galapagos.

Tschanz, B. BBOBACHTUNGEN UND EXPERIMENTE ZUR ENTSTEHUNG DER "PERSÖNLICHEN" BEZIEHUNG ZWISCHEN JUNGVOGEL UND ELTERN BEI TROTTELLUMMEN. [OBSERVATIONS AND EXPERIMENTS ON THE ORIGIN OF "PERSÖNLICHEN" RELATION BETWEEN JUVENILE AND ADULT BIRDS THROUGH THE USE OF RECORDINGS.] Verh. Schweiz. Natur. Ges. 1964: 211-216. 1964. [From Ibis 108(2), 1966. In German.] WR 124: 44
Experiments with tape-recorded calls showed that young guillemots Uria aalge recognise their parents individually by voice. Before hatching, the young in the egg replies to any adult's call, but during the three to four day process of hatching they learn the calls of their own parents. The individual appearance of the parents seems to play a minor role if any.

Ven, Chung-Ming, Kue-Ling Bao, Kei-Zhen Lie, Bai-Yaei Hui, and Kue-Ju Kau. [PRELIMINARY STUDIES ON THE BREEDING BEHAVIOUR OF THE MARSH TIT.] Acta Zool. Sinica 17: 364-372. 1965. [From Auk 83(3), 1966. In Chinese with English summ.] WR 124: 44
"Parus palustris brevirostris."

Verbeek, Nicolaas A. M. WANDERINGS OF THE ANCIENT MURRELET: SOME ADDITIONAL COMMENTS. Condor 68(5): 510-511, 1 fig. Sept.-Oct. 1966. WR 124: 44
[Univ. Calif., Berkeley.] Correlates records from interior United States with air movements.--Courtesy/ Paul A. Stewart.

Weeden, J. Stenger. DIURNAL RHYTHM OF ATTENTIVENESS OF INCUBATING FEMALE TREE SPARROWS (SPIZELLA ARBOREA) AT A NORTHERN LATITUDE. Auk 83(3): 368-388, 1 fig. July 1966. WR 124: 44
[Univ. Alaska, College.] Courtesy/ Paul A. Stewart.

Willis, Edwin O. INTERSPECIFIC COMPETITION AND THE FORAGING BEHAVIOR OF PLAIN-BROWN WOODCREEPERS. Ecology 47(4): 667-672, 4 figs. Summer 1966. WR 124: 44
[Am. Museum Nat. Hist., New York, N.Y.] When plain-brown woodcreepers (Dendrocincla fuliginosa) follow swarms of army ants on Barro Colorado Island, Panama Canal Zone, they forage in the zone near the ground more frequently when ocellated antthrushes (Phaenostictus mcleannani) are absent. The ground-foraging antthrushes regularly supplant the smaller woodcreepers, which then move to higher or to peripheral and less productive zones.--From abstr. Courtesy/ Paul A. Stewart.

Willis, Edwin O. NOTES ON A DISPLAY AND NEST OF THE CLUB-WINGED MANAKIN. Auk 83(3): 475-476, 1 fig. July 1966. WR 124: 44
[Am. Museum Nat. Hist., New York, N.Y.] Courtesy/ Paul A. Stewart.

Zimmerman, John L. EFFECTS OF EXTENDED TROPICAL PHOTOPERIOD AND TEMPERATURE ON THE DICKCISSEL. Condor 68(4): 377-387, 5 figs. July-Aug. 1966. WR 124: 45
[Kans. State Univ., Manhattan.] Zugunruhe, premigratory fat deposition, and molting activity were maintained for one year by birds held in constant environmental conditions.--Courtesy/ Paul A. Stewart.

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Bailey, Roger. THE SEA-BIRDS OF THE SOUTHEAST COAST OF ARABIA. Ibis 108 (2): 224-264, 11 figs. Apr. 1966. WR 124: 45
[Edward Grey Inst., Oxford, England.] With an appendix on the statistical analysis of bird-counts.

Broekhuysen, G. J., M. G. Broekhuysen, J. M. Winterbottom, and M. G. Winterbottom. BIRDS RECORDED FROM AI-AIS, FISH RIVER, SOUTH WEST AFRICA. South African Avifauna Ser. Percy Fitzpatrick Inst. African Ornithol. no. 42. 8 p. 1966. 10¢. WR 124: 45

Brooke, R. K. A PRELIMINARY LIST OF THE BIRDS OF THE KAFUE NATIONAL PARK. Puku 4: 57-86. 1966. WR 124: 45
[Box 8081, Causeway, Rhodesia.] Annotated list of 418 forms.

Carter, William Alfred. ECOLOGY OF THE SUMMER NESTING BIRDS OF THE McCURTAIN GAME PRESERVE. Ph.D. thesis, Okla. State Univ. 67 p. 1965. [From Dissertation Abstr. 27(1B), 1966.] WR 124: 45
Breeding bird estimates, habitat and structure of virgin woodland communities at the western fringe of the Austroriparian Biotic Province.

Cheng, Tso-Hsin, Yao-Kuang Tan, and Yung-Hsin Li. [ON THE AVIFAUNA OF NORTHWESTERN SZECHWAN.] Acta Zool. Sinica 17: 435-450. 1965. [From Auk 83 (3), 1966. In Chinese with English summ.] WR 124: 45
About 302 species are recorded for the area.

Cramp, Stanley, and A. D. Tomlins. THE BIRDS OF INNER LONDON 1951-65. British Birds 59(6): 209-232, 1 fig. June 1966. WR 124: 45
An account is given of the species breeding in the 40 square miles of Inner London between 1951 and 1965, with particular reference to past and present status and estimated populations. Other species occurring are discussed only briefly. By 1965 there were 35 species breeding or attempting to breed each year in Inner London, compared with 32 in 1950. Five new species were the Canada goose Branta canadensis, herring gull Larus argentatus, pochard Aythya ferina, bullfinch Pyrrhula pyrrhula and, possibly, nuthatch Sitta europea, while the little grebe Podiceps ruficollis and stock dove Columba oenas had been lost.--From summ.

Dickerman, Robert William. THE SONG SPARROWS OF THE MEXICAN PLATEAU. Ph.D. thesis, Univ. Minn. 144 p. 1961. [From Dissertation Abstr. 23(8), 1963.] WR 124: 45
See WR 110: 59.

Dowsett, R. J. A PRELIMINARY LIST OF THE BIRDS OF THE KAFUE FLATS. Puku 4: 101-124. 1966. WR 124: 45
Annotated list of 337 spp.

Gerzenstein, E. AVES DE LA COSTA MARITIMA Y ORILLA FLUVIAL DEL URUGUAY. [BIRDS OF THE SEACOAST AND THE RIVERBANKS OF URUGUAY.] Hornero 10: 225-234. 1965. [From Auk 83(3), 1966. In Spanish with English summ.] WR 124: 45
A list, indicating status and often field-marks, of the "water birds" of the coast of Uruguay, from the Brazilian border to the mouth of the Paraná and Uruguay rivers.

Gerzenstein, E. AVES NUEVAS PARA EL URUGUAY. [NEW BIRDS FOR URUGUAY.] Hornero 10: 280-282. 1965. [From Auk 83(3), 1966. In Spanish with English summ.] WR 124: 46

Grant, P. R. A SYSTEMATIC STUDY OF THE TERRESTRIAL BIRDS OF THE TRES MARIAS ISLANDS, MEXICO. Postilla Yale Peabody Museum 90: 1-106, illus. 1965. [From Biol. Abstr. 47(14), 1966.] WR 124: 46
[Peabody Museum Nat. Hist., Yale Univ., New Haven, Conn.]

Hughes, D. A. AVIFAUNA OF THE BARBERTON DISTRICT, EASTERN TRANSVAAL. South African Avifauna Ser. Percy Fitzpatrick Inst. African Ornithol. no. 40. 14 p. 1966. 20¢. WR 124: 46
[Univ. Miami, Miami, Fla.]

Johnson, Richard E. ALPINE BIRDS OF THE LITTLE BELT MOUNTAINS, MONTANA. Wilson Bull. 78(2): 225-227. June 1966. WR 124: 46
[Univ. Calif., Berkeley.] An annotated list with observation on regional status of 27 spp. of birds.--Courtesy/ Paul A. Stewart.

Kartasev, N. [THE BIRDS OF THE COMMANDER ISLANDS.] Ziva 13(2): 65-68, illus. 1965. [From Biol. Abstr. 47(14), 1966.] WR 124: 46
More than 180 spp. of birds are found on the Commander Islands, and over 60 spp. nest there regularly.

Koepcke, M. LAS AVES DEL DEPARTAMENTO DE LIMA. [THE BIRDS OF THE DEPARTMENT OF LIMA, PERU.] Thesis. Illus. 1964. [From Biol. Abstr. 47(14), 1966. In Spanish.] WR 124: 46
[Casilla 5129, Miraflores, Lima, Peru.] This is the first field guide for the identification of birds of a determined Peruvian area. All the 313 spp. of birds so far known in the Department of Lima are briefly described and depicted in their typical postures. The text is written in a manner that is useful for both the ornithologist and the amateur bird watcher.

Krefting, Laurits W., Forrest B. Lee, Philip C. Shelton, and Karl T. Gilbert. BIRDS OF ISLE ROYALE IN LAKE SUPERIOR. US F&WS, Spec. Sci. Rept.--Wildl. no. 94. vi + 56 p., 18 figs. June 1966. WR 124: 46
[Bur. Sport Fisheries & Wildl., St. Paul, Minn.] Abstract: This report constitutes an annotated list of 197 species of birds reported from Isle Royale National Park, a 210-square-mile archipelago in northwestern Lake Superior including some 200 islets and rock outcrops. The island is 45 miles long and 8 miles wide at its widest point. Bird distribution and habitats are described, along with geography and vegetation; 62 species are known to have bred at least once, 26 are thought to be breeders, and the rest are migrants.

McColl, R. H. S., and F. I. Norman. BIRDS OF LOPPA ISLAND 1961-1963 (NORTHERN NORWAY). Sterna (Stravenger Museum) 6(5): 251-260. 1965. [From Biol. Abstr. 47(14), 1966. In English with Swedish summ.] WR 124: 46

Pergolani de Costa, M. J. LOS PICIDOS ARGENTINOS. 7A PARTE. GENEROS CAMPEPHILUS, VENILIORNIS Y DENDROCOPOS. [THE ARGENTINE WOODPECKERS. 7TH PART. CAMPEPHILUS, VENILIORNIS AND DENDROCOPOS.] Hornero 10: 183-196. 1965. [From Auk 83(3), 1966. In Spanish with English summ.] WR 124: 46
Review with descriptions, keys, distribution, and taxonomic discussion with summary of previous article on Celeus, Dryocopus, and Phloeoceastes.

Pooley, A. C., and J. E. W. Dixon. A CHECKLIST OF THE BIRDS OCCURRING IN THE NDUMU GAME RESERVE IN NORTHERN ZULULAND. South African Avifauna Ser. Percy Fitzpatrick Inst. African Ornithol. no. 39. 38 p. 1966. 30¢. WR 124: 46

Szlivka, L. [CONTRIBUTION TO THE AVIFAUNA OF THE OBEDSKA BARA AND ITS ENVIRONS.] Larus 15: 100-126. 1963. [From Auk 83(3), 1966. In Serbocroatian with German summ.] WR 124: 47

Watson, Adam. HILL BIRDS OF THE CAIRNGORMS. Scottish Birds 4(2): 179-203. Summer 1966. WR 124: 47
[Univ. Aberdeen, Aberdeen, Scotland.]

Willis, Edwin O. COMPETITIVE EXCLUSION AND BIRDS AT FRUITING TREES IN WESTERN COLOMBIA. Auk 83(3): 479-480. July 1966. WR 124: 47
[Am. Museum Nat. Hist., New York, N.Y.] Twenty-eight species of birds were seen feeding on the berries of Conostegia sp. during a 1-2 hour interval.--Courtesy/ Paul A. Stewart.

Winterbottom, J. M. A LIST OF THE BIRDS OF THE CERES DISTRICT. South African Avifauna Ser. Percy Fitzpatrick Inst. African Ornithol. no. 41. 15 p. 1966. 20¢. WR 124: 47

BIRDS--POPULATIONS & FLUCTUATIONS

Bédard, Jean. NEW RECORDS OF ALCIDS FROM ST. LAWRENCE ISLAND, ALASKA. Condor 68(5): 503-506. Sept.-Oct. 1966. WR 124: 47
[Univ. British Columbia, Vancouver, British Columbia, Canada.] Status of occurrence of Cepphus grylle mandtii, Synthliboramphus antiquum, Brachyramphus marmoratum marmoratum, and Plautus alle.--Courtesy/ Paul A. Stewart.

Hanebrink, Earl Lee. A STUDY OF BIRD POPULATIONS IN SELECTED HABITATS OF NORTHEAST ARKANSAS. Ph.D. thesis, Okla. State Univ. 93 p. 1965. [From Dissertation Abstr. 27(1B), 1966.] WR 124: 47

Nelson, J. B. POPULATION DYNAMICS OF THE GANNET (SULA BASSANA) AT THE BASS ROCK, WITH COMPARATIVE INFORMATION FROM OTHER SULIDAE. J. Animal Ecol. 35(3): 443-470 + 2 pls. Oct. 1966. WR 124: 47
[Univ. Aberdeen, Aberdeen, Scotland.] Seven factors affecting recruitment rate are examined: mortality rate, non-breeding years, philopatry, social tendency, clutch size, replacement laying, deferred maturity and adult non-breeders. The relationship of these factors to current theories on sea-bird population control is effected in this paper.

Perrins, C. M. THE EFFECT OF BEECH CROPS ON GREAT TIT POPULATIONS AND MOVEMENTS. British Birds 59(10): 419-432, 2 figs. Oct. 1966. WR 124: 47
[Edward Grey Inst., Oxford, England.] Summary: The irregular fruiting habits of the beech Fagus sylvatica are discussed. It is shown that populations of the great tit Parus major fluctuate in relation to the amount of beech seed. Since there is no beech in some of the areas where great tits have been studied the connection cannot be direct, but it seems likely that the beech crop indicates the general level of food abundance. As shown by Ulfstrand (1962), there is a strong tendency for large movements of great tits to be recorded in those years when there is no beech crop. It is suggested (though the data are insufficient to provide full proof) that great tits show eruptive movements not because of high population density but because of food shortage.

Snow, D. W. POPULATION DYNAMICS OF THE BLACKBIRD. Nature 211(5055): 1231-1233, 2 figs. 17 Sept. 1966. WR 124: 47
[British Trust for Ornithology, Beech Grove, Tring, Hertfordshire, England.] "Because no increase in the breeding population of blackbirds [Turdus merula] was recorded over the years 1951-61, despite a reduction of about 10 per cent in the annual mortality, the recruitment rate presumably decreased. The alternatives are that the surplus numbers were absorbed by an expansion of range, that numbers increased in marginal habitats and peripheral areas, or that there was an increase in non-breeding birds unable to acquire territories; good evidence does not exist for any of these alternatives, at least so far as the population of British blackbirds is concerned."

Warner, Alexander Carl. BREEDING-RANGE EXPANSION OF THE SCISSOR-TAILED FLYCATCHER INTO MISSOURI AND IN OTHER STATES. Wilson Bull. 78(3): 289-300, 2 figs. Sept. 1966. WR 124: 48
[Coll. School Ozarks, Point Lookout, Mo.] Courtesy/ Paul A. Stewart.

BIRDS--ECONOMICS, CONTROL, MORTALITY

Bostic, Dennis L., and Richard C. Banks. A RECORD OF STINGRAY PREDATION BY THE BROWN PELICAN. Condor 65(5): 515-516, 1 fig. Sept.-Oct. 1966. WR 124: 48
[Palomar Coll., San Marcos, Calif.] A brown pelican (Pelecanus occidentalis) had in its throat pouch one Symphurus sp., one Gymnura sp., two Urolophus halleri, and one Urotrygon asterias.--Courtesy/ Paul A. Stewart.

Clapp, Roger, and Tina C. Abbott. PILOT BLACK SNAKE PREDATION ON THE LONG-BILLED MARSH WREN. Wilson Bull. 78(3): 321. Sept. 1966. WR 124: 48
[U.S. Natl. Museum, Washington, D.C.] The stomach of a pilot black snake (Elaphe obsoleta) contained two eggs of the long-billed marsh wren (Telmatodytes palustris).--Courtesy/ Paul A. Stewart.

BIRDS--PARASITES & DISEASES

Fay, L. D. TYPE E BOTULISM IN GREAT LAKES WATER BIRDS. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 139-149, 1 fig. 1966. WR 124: 48
[Mich. Dept. Conserv., Lansing.] Botulism from type E toxin was determined the cause of significant mortalities among gulls, loons, grebes, and mergansers in Lake Michigan in 1963, 1964, 1965, and among gulls in Lake Huron in 1965. Diagnosis was based on symptoms of paralysis in sick birds, identification of type E botulinal toxin in the blood of sick and dead birds, inability to isolate pathogens from carcasses, and experimental evidence by other workers that type E toxin is toxic to ring-billed gulls. Analysis of gizzard contents showed that fish was the main food common to the principal species of birds involved. Captive ring-billed gulls developed symptoms of botulism after a meal of certain collections of dead alewives from Lake Michigan. Type E toxin was identified in blood taken from these gulls during the period of symptoms. The distribution of preformed toxin in the Great Lakes, and the means by which loons, grebes, and mergansers which are not believed to feed on carrion, is not known. As far as the author can determine, this is the first time that type E botulism has been implicated in wild bird mortalities. Outbreaks of type C botulism among wild ducks and shorebirds of Michigan marshes on Lake Erie and Lake Huron have been recognized since 1941.--Auth. abstr.

GAME BIRDS--GENERAL

Collias, Nicholas E., Elsie C. Collias, Don Hunsaker, and Lory Minning. LOCALITY FIXATION, MOBILITY AND SOCIAL ORGANIZATION WITHIN AN UNCONFINED POPULATION OF RED JUNGLE FOWL. Animal Behaviour 14(4): 550-559, 5 figs. Oct. 1966. WR 124: 48
[Univ. Calif., Los Angeles.]

Gullion, Gordon W. A VIEWPOINT CONCERNING THE SIGNIFICANCE OF STUDIES OF GAME BIRD FOOD HABITS. Condor 68(4): 372-376. July-Aug. 1966. WR 124: 48
[Univ. Minn., St. Paul.] Most studies of food habits of game birds have used specimens collected during the fall hunting season, when an abundance of natural food is available. More information is needed on food habits during periods of relative food scarcity.--Courtesy/ Paul A. Stewart.

Leck, Charles F. THE HISTORY AND STATUS OF THE RUFF IN EASTERN NORTH AMERICA. Auk 83(3): 473-474. July 1966. WR 124: 49
[Cranbury Rd., Princeton Junction, N.J.] A summary of the 139 published occurrences since 1868 west to Ohio.--Courtesy/ Paul A. Stewart.

Stronach, B. THE FEEDING HABITS OF THE YELLOW-NECKED SPURFOWL (PTERNISTIS LEUCOSCEPUS) IN NORTHERN TANZANIA. East African Wildl. J. 4: 76-81, 2 figs. Aug. 1966. WR 124: 49
[Coll. African Wildl. Mgmt., P.O. Box 3031, Moshi, Tanzania.]

QUAIL

Ellis, Jack A., and Ronald F. Labisky. SOFT-SHELLED EGGS IN A BOBWHITE NEST. Wilson Bull. 78(2): 229. June 1966. WR 124: 49
[Ill. Nat. Hist. Surv., Urbana.] Four soft-shelled eggs were found in the nest of a wild bobwhite (Colinus virginianus).--Courtesy/ Paul A. Stewart.

Kirkpatrick, Ralph D. THE INTRODUCTION OF THE JAPANESE QUAIL (COTURNIX COTURNIX JAPONICA) IN INDIANA. Proc. Ind. Acad. Sci. 75: 289-292. 1965. WR 124: 49
[Indiana Univ., Bloomington.] Account of unsuccessful introduction of 18,896 birds by Ind. Dept. Conserv. during 1957-1959.

Ormiston, John H. THE FOOD HABITS, HABITAT AND MOVEMENTS OF MOUNTAIN QUAIL IN IDAHO. M.S. thesis, Univ. Idaho. 39 p., multilith. 1966. WR 124: 49
Courtesy/ Paul D. Dalke.

Shields, Paul W., and Don A. Duncan. FALL AND WINTER FOOD OF CALIFORNIA QUAIL IN DRY YEARS. Calif. Fish & Game 52(4): 275-282. Oct. 1966. WR 124: 49
[U.S. Forest Serv., Fresno, Calif.] Abstract: Fall-winter diet of California quail, Lophortyx californica, was studied on the San Joaquin Experimental Range near O'Neals, California during November, December, and January of 1960-1963. Results were compared with a 1937 study in the same area. Crops were collected from 376 California quail during the regular hunting seasons. They were grouped by month, and 171 chosen at random and analyzed. Diet components were reported by month and by year, and separated into seeds and leafage. Important differences between current results and results of the 1937 study are shown and discussed. Varying weather conditions and resultant botanical composition caused wide variations in quail diet. The year 1937 and preceding years were wet; the period 1960-1963 was rather dry. In 1937, seed of filaree and turkey mullein formed more than 50% of quail diet in November and December, but made up only 6% in the 3-year period 1960-1963. Filaree was abundant in both periods, but early rains in 1960-1963 caused general plant germination that reduced availability of this seed. Turkey mullein was very scarce in 1960 and 1961 and seed was not available. Far more green leafage was taken in November and December of 1960-1962 than in 1937. This was a result of earlier rains, general plant germination, and availability of green material in 1960-1962. Other important differences are discussed.

Stewart, Paul A. RUNNING SPEED OF BOBWHITE. Wilson Bull. 78(3): 318. Sept. 1966. WR 124: 49
[USDA, Entomol. Res. Div., Oxford, N.C.] In five observations, a running bobwhite (Colinus virginianus) was clocked at 8-10 miles per hour.

Vince, Margaret A. ARTIFICIAL ACCELERATION OF HATCHING IN QUAIL EMBRYOS. Animal Behaviour 14(4): 389-394, 5 figs. Oct. 1966. WR 124: 49
[Cambridge Psychol. Lab., Cambridge, England.] Summary: In twenty-two clutches of Japanese quail and twenty clutches of bobwhites, a single egg was stimulated either by sound, or by vibration, at the rate of three per second, from approximately 48 hr before hatching. The remaining eggs in the clutch were hatched at distances of approximately 4 in. from each other. In the great majority of clutches the stimulated egg hatched first, and it is concluded that the development of the embryo had been accelerated by the stimulation provided.

PHEASANTS

Gates, John M. RENESTING BEHAVIOR IN THE RING-NECKED PHEASANT. Wilson Bull. 78(3): 309-315. Sept. 1966. WR 124: 50

[Wis. Conserv. Dept., Waupun.] All unsuccessful ring-necked pheasants (Phasianus colchicus) renested at least once and some more than once. Adult hens were more persistent renesters than juveniles. Renesting occurred near the original nest sites. First nesting attempts occurred in permanent cover and renesting chiefly in hayfields.--From summ. Courtesy/ Paul A. Stewart.

Gates, John M. CROWING COUNTS AS INDICES TO COCK PHEASANT POPULATIONS IN WISCONSIN. J. Wildl. Mgmt. 30(4): 735-744, 5 figs. Oct. 1966. WR 124: 50

[Wis. Conserv. Dept., Madison.] Abstract: Reliability of the crowing count was investigated in 1959-64 on an area of known pheasant populations in east-central Wisconsin. Certain assumptions implicit in use of the crowing count as a population index were tested: (1) that the timing of counts was uniform each year in relation to the seasonal trend in crowing, (2) that a constant fraction of the cock population was crowing at all density levels, (3) that annual variations in sex ratios did not influence crowing behavior, and (4) that crowing intensity was independent of population density. Only the latter assumption was rejected. Crowing intensity increased about 8 percent per unit increase of 100 cocks on the study area. This degree of bias was regarded as relatively unimportant operating over the narrow range of year-to-year population change in the present study. Since population levels often differ to a greater extent between areas than they do between years in the same area, density bias may be more important where crowing counts are used for regional comparisons. The importance of making crowing counts only under optimal weather conditions in order to minimize sampling error is stressed. Under Wisconsin conditions, the crowing count appeared to be reliable as an annual index to cock pheasant populations.

Vohs, Paul A., Jr. BLOOD GROUP FACTORS FOR ANALYZING PHEASANT POPULATIONS. J. Wildl. Mgmt. 30(4): 745-753. Oct. 1966. WR 124: 50

[Iowa State Univ., Ames.] Abstract: Ring-necked pheasants (Phasianus colchicus) in Iowa exhibit differing antigenic properties of their red blood cells known as blood group factors. Three factors identified as A, B, and C were detected by agglutination reactions of red blood cells with typing fluids prepared by injecting red blood cells of ring-necked pheasants into other ringnecks or into domestic rabbits. Factors A, B, and C are apparently inherited according to the rules of Mendelian inheritance and appear to segregate independently. Frequencies of factors varied in limited samples of three widely spaced populations in Iowa. Differences in frequencies of the factors may be utilized to identify and characterize pheasant populations and to identify specific genetic material in "gene pools."

GROUSE, PARTRIDGE, ETC.

Bendell, J. F., and P. W. Elliott. HABITAT SELECTION IN BLUE GROUSE. Condor 68(5): 431-446, 3 figs. Sept.-Oct. 1966. WR 124: 50

[Univ. British Columbia, Vancouver, British Columbia, Canada.] Breeding blue grouse (Dendragapus obscurus fuliginosus) used dry, sparsely vegetated habitat more than densely vegetated habitat. Within sparsely vegetated areas, elevated land was selected for hooting. Hooting males attracted both yearling males and lone hens. Hens with broods moved about independently of territories of males. Alpine and subalpine forest was the habitat used during the winter.--Courtesy/ Paul A. Stewart.

Ellison, Laurence. SEASONAL FOODS AND CHEMICAL ANALYSIS OF WINTER DIET OF ALASKAN SPRUCE GROUSE. J. Wildl. Mgmt. 30(4): 729-735. Oct. 1966. WR 124: 50

[Alaska Dept. Fish & Game, Fairbanks.] Abstract: Volumetric and weight analysis of the crop contents of 237 Alaskan spruce grouse (Canachites canadensis) showed that the winter diet was largely spruce (Picea spp.) needles

and that during other seasons berries and leaves of several species of Vaccinium were important foods. Chemical analysis of black spruce (P. mariana) and white spruce (P. glauca) needles indicated that black spruce had a higher fat and caloric content than white spruce, but a lower ash content.

Gibson, George Gordon. THE TAXONOMY AND BIOLOGY OF SPLENDIDOFILARIINE NEMATODES OF THE TETRACNIDAE OF BRITISH COLUMBIA. Ph.D. thesis, Univ. British Columbia. 1965. [From Dissertation Abstr. 27(4B), 1966.] WR 124: 51
"To obtain a copy please write directly to the National Library of Canada."

Gill, R. Bruce. A LITERATURE REVIEW ON THE SAGE GROUSE. Colo. Dept. Game, Fish & Parks and Colo. Coop. Wildl. Res. Unit, Spec. Rept. no. 6. v + 39 p., 13 figs. Apr. 1966. $1.00. WR 124: 51
With sections on the distribution, abundance, description, age and sex differences, life history, decimating factors and management of Centrocercus urophasianus.

Gullion, Gordon W. THE USE OF DRUMMING BEHAVIOR IN RUFFED GROUSE POPULATION STUDIES. J. Wildl. Mgmt. 30(4): 717-729, 2 figs. Oct. 1966. WR 124: 51
[Univ. Minn., St. Paul.] Abstract: Although the drumming behavior of male ruffed grouse (Bonasa umbellus) provides an excellent opportunity to work with this elusive species, much has to be known concerning this behavior before data gathered by this means can be safely interpreted. Frequency and persistence of drumming activity varies from bird to bird and between years. Lateness of snow melt, temperature, and precipitation are dominant factors influencing daily and seasonal drumming activity. Because of the variations in day-to-day and season-to-season drumming activity, population indices based on drumming alone lead to moderate or even gross underestimates of the number of grouse occupying sampled areas. However, a total census of male grouse achieved by repeated searching for occupied drumming activity centers is believed to provide the best population estimate which can be obtained on areas of a few thousand acres in northern Minnesota. The roadside drumming count appears to provide the best region-wide forecast of hunting success the next fall.

Johnstone, G. W., and Fred C. Zwickel. NUMBERS OF CAPERCAILLIE IN THE BLACK WOOD OF RANNOCH. British Birds 59(11): 498-499. Nov. 1966. WR 124: 51
An indicated population of one Tetrao urogallus per 15 acres. In terms of biomass this is equivalent to a population density of Lagopus lagopus scoticus of about one bird per 3 acres.

Peters, Stuart Sanford. POPULATION DYNAMICS OF THE NEWFOUNDLAND WILLOW PTARMIGAN ON THE AVALON PENINSULA. Ph.D. thesis, Cornell Univ. 114 p. 1963. [From Dissertation Abstr. 23(12), 1963.] WR 124: 51

Zwickel, Fred C. WINTER FOOD HABITS OF CAPERCAILLIE IN NORTH-EAST SCOTLAND. British Birds 59(8): 325-336, 1 fig. Aug. 1966. WR 124: 51
[Oreg. State Univ., Corvallis.] Crop contents from 99 capercaillie Tetrao urogallus shot by hunters in north-east Scotland during the winter of 1965-66 were analyzed. These showed Scots pine Pinus sylvestris to represent over 90% of the winter food. Needles made up the bulk of the pine taken, although twigs, buds and unopened cones were also eaten. Small amounts of other coniferous trees, broad-leaved plants and ferns were also used, but showed little increase in the diet during snow-free periods. Cereal grains were not found in crops taken after 15th November. Little grit was found in crops even though much of the winter was snow-free. The mean weight of crop contents suggests that the amount of foods recorded here represents only a small proportion of the total daily intake.--From summ.

GROUSE, PARTRIDGE, ETC.--Continued

Zwickel, Fred C., James H. Brigham, and Irven O. Buss. AUTUMN WEIGHTS OF BLUE GROUSE IN NORTH-CENTRAL WASHINGTON, 1954 TO 1963. Condor 68(5): 488-496, 1 fig. Sept.-Oct. 1966. WR 124: 52

[Oreg. State Univ., Corvallis.] Summary: Body-weight data were collected over a 10-year period from 2236 hunter-killed blue grouse in two areas of north-central Washington. Differences in mean weights were found between the two areas in all sex and age categories. These differences are thought to be a result of either a racial cline in weight between the two areas or ecotypic responses to the two environments. The mean weights of adults were found not to vary annually (with one exception), but the mean weights of juveniles did vary annually. No correlations were observed between annual mean weights in any sex or age category and autumn age ratios. With respect to weight, juvenile females appear to mature faster than juvenile males. The data suggest that the degree of sexual dimorphism in mean weights may be of value in studies of the phylogeny of the tetraonids.--Courtesy/ Paul A. Stewart.

Zwickel, Fred C., and Art N. Lance. DETERMINING THE AGE OF YOUNG BLUE GROUSE. J. Wildl. Mgmt. 30(4): 712-717, 3 figs. Oct. 1966. WR 124: 52

[Oreg. State Univ., Corvallis.] Abstract: A technique is described for determining the age of young blue grouse (Dendragapus obscurus fuliginosus) on Vancouver Island, based on the molt and development of juvenal and postjuvenal primary feathers. When the method was tested on 73 wild birds whose approximate ages were known, 69 determinations (95 percent) were within 5 days of expected ages.

DOVES & PIGEONS

Benson, C. W., and M. P. Stuart Irwin. THE BRONZE-NAPED PIGEON, COLUMBA DELEGORGUEI (DELEGORGUE), IN RHODESIA. Arnoldia 2(23): 1-4. 25 Apr. 1966. WR 124: 52

Blankinship, David R. THE RELATIONSHIP OF WHITE-WINGED DOVE PRODUCTION TO CONTROL OF GREAT-TAILED GRACKLES IN THE LOWER RIO GRANDE VALLEY OF TEXAS. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 45-58, 1 fig. 1966. WR 124: 52

[817 Indiana St., Weslaco, Texas.] The white-winged dove and its major nest predator, the great-tailed grackle have been concentrated into citrus groves and small woodland tracts as a result of clearing the land for field crops. During the spring and summer of 1964 and 1965, 2,824 and 1,398 grackles respectively were removed by shooting from a 15.5 acre woodland whitewing nesting colony located 7 miles northwest of Brownsville, Texas. Whitewing production was sampled with 3 belt transects of 0.25 acre each. Whitewing populations of 449 pairs/acre in 1964 and 529 pairs/acre in 1965 were established by number of nests active at one time. This compares to the previous high population for this area of 256 pairs/acre in 1956. The average number of young whitewings fledged from transects on the study area in 1964 and 1965 showed an increase of some 200% over the best year without grackle control. Conclusions were that nest transects in areas with high predation give estimates of breeding populations which are too low and of nesting success which are too high; and that removal of a large portion of the grackle population from whitewing colonies will produce a marked increase in whitewing production.--Auth. abstr.

Drewien, Roderick C., and Rollin D. Sparrowe. NESTING AND PRODUCTION OF THE MOURNING DOVE IN EASTERN SOUTH DAKOTA, 1965. S. Dak. Bird Notes 8(2): 33-44, 1 fig. June 1966. WR 124: 52

Nesting activity and success, and habitat use are the major topics of discussion.

Erickson, Carl John. A STUDY OF THE COURTSHIP BEHAVIOR OF MALE RING DOVES AND ITS RELATIONSHIP TO OVARIAN ACTIVITY OF FEMALES. Ph.D. thesis, Rutgers State Univ. 177 p. 1965. [From Dissertation Abstr. 27(1B), 1966.] WR 124: 53

Lesser, Charles A. RECORD OF MOURNING DOVE KILL BY AMERICAN KESTREL. Wilson Bull. 78(2): 228-229, 1 fig. June 1966. WR 124: 53
[Univ. Del., Newark.] A male kestrel (Falco sparverius) was observed to attack and kill a mourning dove (Zenaidura macroura).--Courtesy/ Paul A. Stewart.

Lofts, B., R. K. Murton, and N. J. Westwood. GONADAL CYCLES AND THE EVOLUTION OF BREEDING SEASONS IN BRITISH COLUMBIDAE. J. Zool. (London) 150(2): 249-272, 3 figs. + 1 pl. Oct. 1966. WR 124: 53
[St. Bartholomew's Hospital Med. Coll., Univ. London, London, England.] The gonads of wood-pigeons in a Cambridgeshire study area attain peak reproductive condition in July and this condition persists until late Sept. or early Oct. when rapid regression takes place. Gametogenesis recommences in early Mar. In the same area the stock-dove has a similar cycle but gametogenesis begins about two months earlier and regression apparently takes place about one month later. A wild rock-dove population at Flamborough Head, Yorkshire, has an even longer physiological breeding season, gametogenesis commencing from Dec. Seasonal regression occurs in Oct. Compared with the wood-pigeon's food supply, that of nestling stock- and rock-doves is available for a much longer period and there is a correspondingly greater survival from early broods. Selection can, therefore, favor a longer physiological breeding season in parallel with the actual period when viable young are produced.--From abstr.

MacMillen, Richard E., and Charles H. Trost. WATER ECONOMY AND SALT BALANCE IN WHITE-WINGED AND INCA DOVES. Auk 83(3): 441-456, 6 figs. July 1966. WR 124: 53
[Pomona Coll., Claremont, Calif.] White-winged doves (Zenaida asiatica) range widely and thus satisfy their water needs by increased likelihood of finding surface water. Inca doves have relatively less versatile water requirements and are restricted to desert towns.--Courtesy/ Paul A. Stewart.

McFarland, D. J., and A. B. L'Angellier. DISINHIBITION OF DRINKING DURING SATIATION OF FEEDING BEHAVIOUR IN THE BARBARY DOVE. Animal Behaviour 14(4): 463-467. Oct. 1966. WR 124: 53
[Inst. Exptl. Psychol., Oxford, England.] Summary: The onset of satiation of operant feeding behaviour in the Barbary dove is characterized by a pause during which no feeding behaviour occurs. If water is present in the test-cage, the birds will drink, but the presence of water does not affect the time at which the pause occurs. Birds which have been deprived of water as well as food drink more water during the pause than birds deprived only of food, but again the position of the pause is not affected. It is argued that the pause is a true indication of the satiation of feeding behaviour, and that it is caused by a shift of attention during which drinking is disinhibited. The implications of the results for physiological theories of food satiation are discussed in detail, and it is concluded that there are two types of interaction between the feeding and drinking systems of the Barbary dove; a short-term type and a long-term type.

Stone, Charles P. A LITERATURE REVIEW ON MOURNING DOVE SONG AS RELATED TO THE COO-COUNT CENSUS. Colo. Dept. Game, Fish & Parks and Colo. Coop. Wildl. Res. Unit, Spec. Rept. no. 11. iii + 29 p. Aug. 1966. Price $1.00. WR 124: 53
"Materials presented in this review of literature are concerned with the influents and meaning of mourning dove (Zenaidura macroura) cooing. A general review of the concepts and functions of bird territory and song is presented as background material requisite to understanding dove song. Emphasis is placed on the internal and external influents of cooing, the meaning of the mourning dove perch-coo, and the problems associated with the coo-count as a population index. Individual treatment of the influents of cooing does not imply that

they act independently of one another, but rather that studies to date have largely considered influents separately. Some of the ideas presented are speculative, and hopefully will stimulate further research. Some of the problems discussed should be solved by research now in progress."

Tomlinson, Roy E. MOURNING DOVE STATUS REPORT, 1965. US F&WS, Spec. Sci. Rept.--Wildl. no. 91. iv + 37 p., 3 figs. Oct. 1965. WR 124: 54
[Migratory Bird Populations Sta., Laurel, Md.] In comparison with the 10-year average breeding population indexes (1955-64), the 1965 indexes are 1.4 percent lower for the Eastern Management Unit, 11 percent lower for the Central Management Unit, and 2.5 percent lower for the Western Management Unit. For the United States, the breeding population is 7.4 percent below the 10-year average. Summaries of call-count surveys conducted in Canada during 1964 and 1965 are included. The average numbers of doves heard on comparable routes in Ontario and British Columbia increased 25 and 4 percent, respectively.--From abstr.

WATERFOWL

Addy, C. E. DUCKS TO SPARE? Wildl. in N.C. 30(6): 6-8, illus. June 1966. WR 124: 54
[Patuxent Wildl. Res. Center, Laurel, Md.] The problems of species management for waterfowl are discussed. Five of the 40 spp. of ducks in the United States and Canada supply 70% of the kill. "To get more shooting from the same number of birds the duck hunter is going to have to know his ducks and abide by the rules of the game."

Addy, C. E. THE HONKER--GAME BIRD OF THE FUTURE? PART 1. Wildl. in N.C. 30(7): 17-19, illus. July 1966. WR 124: 54
[Patuxent Wildl. Res. Center, Laurel, Md.] "If we manage migration and wintering habitats properly and keep the kill within certain limits we can have many more geese in the [Atlantic] Flyway than we have today."

Addy, C. E. THE HONKER--GAME BIRD OF THE FUTURE? PART 2. Wildl. in N.C. 30(8): 10-11, illus. Aug. 1966. WR 124: 54
[Patuxent Wildl. Res. Center, Laurel, Md.] "If we want to develop and maintain strong goose flights and make it possible for hunters throughout the Flyway to hunt and harvest a share of the birds, the only sensible solution is to set state or regional kill quotas in addition to having delayed opening dates and other general regulations.... Very likely some sort of compulsory tagging system could be devised whereby only so many permits would be issued per state."

Baker, J. G. THE INDUSTRIAL STATUS OF LEAD SHOT SUBSTITUTES. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 97-103, 3 figs. 1966. WR 124: 54
[Winchester-Western Div. of Olin, East Alton, Ill.] "At the present time, there is no substitute for lead shot which can be considered practical. Even if we accept the reduced performance levels delivered by iron shot (reduced effective range), we have no answer to the problem of barrel damage."

Beme, R. L., S. G. Priklonskii, and S. M. Uspenskii. [THE WATERFOWL OF THE INDIGIRKA-RIVER ESTUARY AND ITS MANAGEMENT.] Ornitologiya 7: 20-28. 1965. [From Ibis 108(2), 1966. In Russian.] WR 124: 54
The waterfowl census in and around the estuary of the Indigirka river on an area of roughly one million hectares during the summer of 1960 gave about 110,000 geese (mainly white-fronted Anser albifrons) and 100,000 ducks, besides a few swans.

Bergman, G. DER SEXUELLE GRÖSSENDIMORPHISMUS DER ANATIDEN ALS ANPASSUNG AN DAS HÖHLENBRÜTEN. [SEXUAL DIMORPHISM OF WATERFOWL WITH ADAPTATIONS FOR HOLE-NESTERS.] Commentationes Biol. 28(1). 10 p. 1965. [From Auk 83(3), 1966. In German.] WR 124: 54

Borden, Richard, and H. Albert Hochbaum. GADWALL SEEDING IN NEW ENGLAND. Trans. 31st N. Am. Wildl. & Nat. Resources Conf. p. 79-88. 1966. WR 124: 55
[Mass. Audubon Soc., Concord.] "In face of the millions of dollars in public funds that have been spent on waterfowl management during the past 20 years, this is a short and simple story of what private individuals may accomplish [with modest expense] in the culture of free-winged ducks on small areas."

Brakhage, George K. TUB NESTS FOR CANADA GEESE. J. Wildl. Mgmt. 30(4): 851-853, 1 fig. Oct. 1966. WR 124: 55
[Mo. Dept. Conserv., Columbia.] Abstract: Since 1958, Canada geese (Branta canadensis) in Missouri have used elevated nesting sites where losses to floods and most mammalian predators are eliminated. Wash tubs mounted on pipe were acceptable nest sites. Optimum tub spacing in open marshes was probably about one nest site per acre, provided a suitable loafing site was available for the gander. There was no correlation between height of tub and loss of nests to predators, or to usage by nesting geese. Tubs were still serviceable after 9 years but shifting ice was a hazard to the supports. Use of tubs by other wildlife was negligible.

Dane, Charles Warren. THE INFLUENCE OF AGE ON THE DEVELOPMENT AND REPRODUCTIVE CAPABILITY OF THE BLUE-WINGED TEAL (ANAS DISCORS LINNAEUS). Ph.D. thesis, Purdue Univ. 186 p. 1965. [From Dissertation Abstr. 27(2B), 1966.] WR 124: 55

Dane, Charles W. SOME ASPECTS OF BREEDING BIOLOGY OF THE BLUE-WINGED TEAL. Auk 83(3): 389-402, 4 figs. July 1966. WR 124: 55
[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.] Discussions on nesting chronology, clutch size, and incubation period of Anas discors.--Courtesy/ Paul A. Stewart.

Dowsett, R. J. THE STATUS AND DISTRIBUTION OF THE HOTTENTOT TEAL ANAS PUNCTATA IN ZAMBIA. Puku 4: 125-127. 1966. WR 124: 55

Dowsett, R. J. THE STATUS OF FOUR SPECIES OF AQUATIC BIRD IN ZAMBIA AS SUGGESTED BY RINGING RECOVERIES. Puku 4: 129-133. 1966. WR 124: 55
"Ardeola ibis, Platalea alba, Threskiornis aethiopicus and Anas erythrorhynchos."

Duffy, McFadden, and Clark Hoffpaeur. HISTORY OF WATERFOWL MANAGEMENT. La. Conservationist 18(7&8): 6-11, illus. July-Aug. 1966. WR 124: 55
"This is intended to be a glance in depth at waterfowl management. Much has been learned and there is much more to be learned. Habitat preservation and hunter opportunity go hand-in-hand. The biggest problem facing managers of waterfowl is how to accomplish that problem of preserving habitat and providing the traditional sport of waterfowling."

Hansen, Henry A., and Mildred R. Hudgins. WATERFOWL STATUS REPORT 1966. US F&WS, Spec. Sci. Rept.--Wildl. no. 99. ii + 96 p. Oct. 1966. WR 124: 55
"The groups of data are organized by flyways, from Pacific to Atlantic, with appendixes of tables to correspond."

Hein, Dale, and Arnold O. Haugen. ILLUMINATION AND WOOD DUCK ROOSTING FLIGHTS. Wilson Bull. 78(3): 301-308, 4 figs. Sept. 1966. WR 124: 55
[Iowa State Univ., Ames.] "Wood duck roosting flights were controlled primarily by light."--Courtesy/ Paul A. Stewart.

Hein, Dale, and Arnold O. Haugen. AUTUMN ROOSTING FLIGHT COUNTS AS AN INDEX TO WOOD DUCK ABUNDANCE. J. Wildl. Mgmt. 30(4): 657-668, 4 figs. Oct. 1966. WR 124: 56

[Wake Forest Coll., Winston-Salem, N.C.] Abstract: Roosts and roosting flights of wood ducks (Aix sponsa) were studied during autumn, 1959-64. Observations were made during 768 flight periods at 52 roosts. The primary study area was a 100-mile segment of Mississippi River bottoms in northeastern Iowa. Roosts were in many species of emergent vegetation. Barring major changes in habitat, autumn roost sites were usually the same each night and each year. Autumn migrants used roosts established in late summer by local birds. Seasonal changes in roosting populations were similar each year. September 20 is recommended for making roosting flight counts to be used as an index to annual changes in abundance of wood ducks. Evening counts were superior to morning counts. Numbers at a roost ranged up to 5,400. Sampling units, sampling schemes, sensitivity, and use of roosting flight counts for estimating abundance of wood ducks are discussed.

Herman, Carlton M., Julian O. Knisley, Jr., and Elizabeth L. Snyder. SUBINOCULATION AS A TECHNIQUE IN THE DIAGNOSIS OF AVIAN PLASMODIUM. Avian Diseases 10(4): 541-547, 1 fig. 1966. WR 124: 56

[Patuxent Wildl. Res. Center, Laurel, Md.] Summary: In two successive years, 1964 and 1965, blood subinoculated from wild Canada geese, negative for Plasmodium by examination of peripheral blood smears, into 5-day-old domestic geese produced 60% infection in the recipients. Prepatent and patent periods, as well as intensity of parasitemia showed much variation. Intramuscular inoculation produced the same prevalence as the intravenous route, but longer prepatent periods and less intensity of parasitemia.

Lebreton, P., and P. Rochette. STATISTIQUES CYNÉGÉTIQUES SUR LES ANATIDES DE LA DOMBES. [HUNTING STATISTICS FOR DUCKS OF DOMBES.] Alauda 33: 84-130. 1965. [From Ibis 108(2), 1966. In French.] WR 124: 56

Locke, L. N., G. E. Bagley, and H. D. Irby. ACID-FAST INTRANUCLEAR INCLUSION BODIES IN THE KIDNEYS OF MALLARDS FED LEAD SHOT. Bull. Wildl. Disease Assoc. 2: 127-131, 2 figs. Oct. 1966. WR 124: 56

[Patuxent Wildl. Res. Center, Laurel, Md.] Abstract: Acid-fast intranuclear inclusion bodies were found in the cells of the proximal convoluted tubules of the kidneys of mallards fed one, two, three or eight number 6 lead shot and maintained on cracked or whole corn and on grain-duck pellet diets. No acid-fast inclusion bodies were found in mallards fed one or three lead shot but maintained on a duck pellet ration. Dietary factors may be responsible for the failure of mallards fed a duck pellet ration to develop lead inclusion bodies when treated with one or three lead shot. The authors suggest these inclusion bodies can be used as presumptive evidence for lead intoxication in mallards.

Lokemoen, John T. BREEDING ECOLOGY OF THE REDHEAD DUCK IN WESTERN MONTANA. J. Wildl. Mgmt. 30(4): 668-681, 4 figs. Oct. 1966. WR 124: 56

[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.] Abstract: The habits of the redhead duck (Aythya americana) were studied in the Flathead Valley of western Montana in 1960 and 1961 to determine their habitat preferences in this pothole breeding ground. The 2,600-acre study area, surrounding the Ninepipe Reservoir, contained 686 potholes. Redheads usually were paired by the time they arrived on the study area in March. The average density of redhead breeding pairs was 25 pairs per square mile. For all spring activities except nesting, the birds used large, deep, open potholes or breeding-pair potholes. The several breeding-pair potholes and the nesting pothole utilized by the pair comprised their home range. Starting in late April, the pairs moved about the home range as the hens selected nesting sites, usually in the dense emergent vegetation of small, shallow potholes. Hard-stem bulrush (Scirpus acutus) and cat-tail (Typha latifolia) were preferred nesting cover. Redhead nesting success was only 15 percent, a low rate apparently

caused by degenerate nesting behavior complicated by high redhead density, a lack of suitable nest hosts, and certain habitat deficiencies. By late June most drakes and unsuccessful hens had moved from the potholes to nearby reservoirs. All successful hens led their newly hatched broods from the nesting potholes to larger brood potholes and many eventually moved to the reservoir. By mid-July virtually all redheads had moved from the potholes to the reservoirs, where they remained until fall migration.

Malone, Charles R. REGURGITATION OF FOOD BY MALLARD DUCKS. Wilson Bull. 78(2): 227-228. June 1966. WR 124: 57

[Texas Technol. Coll., Lubbock.] Mallards (Anas platyrhynchos) regurgitated food about 45 minutes after ingestion, presumably as a result of having over-eaten.--Courtesy/ Paul A. Stewart.

Martinson, R. K., and J. A. McCann. PROPORTION OF RECOVERED GOOSE AND BRANT BANDS THAT ARE REPORTED. J. Wildl. Mgmt. 30(4): 856-858, 1 fig. Oct. 1966. WR 124: 57

[Migratory Bird Populations Sta., Laurel, Md.] Abstract: A few more than one-third of the goose and brant bands recovered by hunters were reported to the Bird Banding Laboratory (a rate of 0.361) during the 1962-64 hunting seasons. We calculated this band-reporting rate by comparing the estimated number of goose and brant bands recovered by hunters, based on a mail questionnaire survey, with the number of bands actually reported to the Bird Banding Laboratory. This band-reporting rate is probably representative only of the 1962-65 period. It is likely that, in earlier years, a greater proportion (perhaps about 0.60) of recovered goose and brant bands were reported.

McAllum, H. J. F. THE ADAPTATION AND INCREASE IN THE PARADISE SHELDUCK (TADORNA VARIEGATA) WITHIN A MAN-MODIFIED ENVIRONMENT. Trans. Roy. Soc. New Zealand (Zool.) 6: 115-125. 1965. [From Auk 83(3), 1966.] WR 124: 57

McGilvrey, Frank B. NESTING OF HOODED MERGANSERS ON THE PATUXENT WILDLIFE RESEARCH CENTER, LAUREL, MARYLAND. Auk 83(3): 477-479. July 1966. WR 124: 57

[Patuxent Wildl. Res. Center, Laurel, Md.]

Monnie, James B. REINTRODUCTION OF THE TRUMPETER SWAN TO ITS FORMER PRAIRIE BREEDING RANGE. J. Wildl. Mgmt. 30(4): 691-696. Oct. 1966. WR 124: 57

[Mark Twain Refuge, Quincy, Ill.] Abstract: Trumpeter swans (Olor buccinator) were transplanted from Red Rock Lakes National Wildlife Refuge in Montana to Lacreek National Wildlife Refuge in South Dakota beginning in 1960. Successful nesting occurred in 1963 and in subsequent years. The 3-month-old cygnets moved to Lacreek Refuge were wing clipped and held in captivity for a time before release. Observations strongly indicate that pair formation begins at least by the time the birds are 20 months of age. Initial nesting occurred at age 2 years 9 months. Predators, generally not a limiting factor to wild flocks, were a major source of loss of captive cygnets.

Nyholm, E. ECOLOGICAL OBSERVATIONS ON THE GEESE OF SPITSBERGEN. Ann. Zool. Fenn. 2: 197-207. 1965. [From Auk 83(3), 1966.] WR 124: 57

Raveling, Dennis G. FACTORS AFFECTING AGE RATIOS OF SAMPLES OF CANADA GEESE CAUGHT WITH CANNON-NETS. J. Wildl. Mgmt. 30(4): 682-691, 2 figs. Oct. 1966. WR 124: 57

[Coop. Wildl. Res. Lab., Southern Ill. Univ., Carbondale.] Abstract: Widely differing opinions are held concerning the reliability of age-ratio statistics derived from samples of Canada geese trapped with cannon-nets. The 95 percent confidence limits of an age-ratio estimate of 41.3 percent immature derived from 35 catches involving 2,451 geese were 35.3-50.5 percent immature. These data indicate the potential for error when such data are used to analyze population dynamics. Based on a study of behavior of marked Canada geese of all ages and sexes and family units, utilizing radio-telemetry, reasons are

suggested for age-ratio fluctuations of cannon-net trap samples. Important interrelated factors causing such cannon-net trap age-ratio differences are time of year, time of day, food availability, behavior changes, length of time on bait, and weather. When these factors cause Canada geese to crowd densely onto a baited-trap site, a higher percentage of adults would usually be obtained than when trap catches represent different levels of aggression, family defense, and less crowded conditions. Alternative explanations are offered of data that led Funk and Grieb (1965) to conclude that age ratios from baited-trap samples reliably indicate population structure--a conclusion different from that reached in this paper.

Reid, Brian. HAND REARED MALLARDS IN SOUTHLAND / AN ANALYSIS OF BAND RECOVERIES. New Zealand J. Sci. 9(3): 630-650. Sept. 1966. WR 124: 58
[Wildl. Branch, Dept. Internal Affairs, Wellington, New Zealand.]

Schroeder, Charles H. THE DUCKS RETURN TO NORTH DAKOTA. N. Dak. Outdoors 29(1): 12-13, 2 figs. July 1966. WR 124: 58
The results of the 1966 survey indicated that the 1966 breeding duck population in N. Dak. was up 37% from 1965 and up 141% from the 1948-65 average breeding duck population. The number of water areas recorded in 1966 was up 33% from 1965 and up 170% from the 1948-65 average. The numbers of ducks, water areas and coots obtained in 1966 were the highest recorded since the survey was started in 1948.

Sherwood, Glen A. FLEXIBLE PLASTIC COLLARS COMPARED TO NASAL DISCS FOR MARKING GEESE. J. Wildl. Mgmt. 30(4): 853-855, 1 fig. Oct. 1966. WR 124: 58
[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.] Abstract: Construction of a flexible plastic collar for marking geese is described. The usefulness of the collars, tried on 468 Canada geese (Branta canadensis) at the Seney National Wildlife Refuge from 1963 to 1965, was compared with that of nasal discs attached to 361 Canada geese at Seney in 1961 and 1962. The collars were superior to the discs in visibility, retention, and ease of placement, and injury to the geese was eliminated. There was no evidence that the collars affected breeding behavior.

Smith, Robert Irvin. THE SOCIAL ASPECTS OF REPRODUCTIVE BEHAVIOR IN THE PINTAIL (ANAS ACUTA ACUTA, L.). Ph.D. thesis, Utah State Univ. 78 p. 1963. [From Dissertation Abstr. 24(7), 1964.] WR 124: 58

Tate, James, Jr., and D. Jean Tate. ADDITIONAL RECORDS OF WHISTLING SWANS FEEDING IN DRY FIELDS. Condor 68(4): 398-399. July-Aug. 1966. WR 124: 58
[Univ. Nebr., Lincoln.] "Near Stockton, Calif."--Courtesy/ Paul A. Stewart.

Wood, Jack Sheehan. REPRODUCTIVE DEVELOPMENT AND FACTORS AFFECTING REPRODUCTION IN SEMI-DOMESTICATED CANADA GEESE. Ph.D. thesis, Mich. State Univ. 94 p. 1963. [From Dissertation Abstr. 24(6), 1963.] WR 124: 58
See WR 118: 57.

CRANES, RAILS, SHOREBIRDS

Andersson, S. [A STUDY OF LARUS ARGENTATUS FROM THE ARCHIPELAGO OF VÄSTERVIK.] Vår Fågelvärld 23: 337-347. 1964. [From Auk 83(3), 1966. In Swedish with English summ.] WR 124: 58

Bergman, G. [COMPETITION AND FEEDING ECOLOGY OF GULLS IN A SOUTH FINNISH SKERRYGARD.] Zool. Revy 27: 58-77. 1965. [From Ibis 108(2), 1966. In Swedish with German summ.] WR 124: 58

Bergman, G. ÜBER DIE SCHWANKUNGEN DER HERBSTZUGZEIT DES KRANICHS, GRUS GRUS (L.), IN SÜDFINNLAND. [ON THE SHIFTING OF THE FALL MIGRATION OF THE CRANE GRUS GRUS (L.) IN SOUTHERN FINLAND.] Mem. Soc. Fauna & Flora Fennica 41. 12 p. 1965. [From Auk 83(3), 1966. In German.] WR 124: 59

Brackbill, Hervey. HERONS LEAVING THE WATER TO DEFECATE. Wilson Bull. 78 (3): 316. Sept. 1966. WR 124: 59

[2620 Poplar Dr., Baltimore, Md.] Twelve records of common egrets (Casmerodius albus) and 10 records of snowy egrets (Leucophoyx thula) leaving the water to defecate are mentioned.--Courtesy/ Paul A. Stewart.

Cunningham, Richard L. CASPIAN TERN FEEDING UPON CARRION. Wilson Bull. 78(3): 319. Sept. 1966. WR 124: 59

[Everglades Natl. Park, Homestead, Fla.] A Caspian tern (Hydroprogne caspia) was observed feeding on a road-killed cottonmouth (Agkistrodon piscivorus).--Courtesy/ Paul A. Stewart.

Duke, Gary E. RELIABILITY OF CENSUSES OF SINGING MALE WOODCOCKS. J. Wildl. Mgmt. 30(4): 697-707, 6 figs. Oct. 1966. WR 124: 59

[Mich. State Univ., East Lansing.] Abstract: Factors affecting the courtship performance of woodcocks (Philohela minor) and the accuracy of the annual Singing Ground Survey of the U.S. Fish and Wildlife Service were studied in 1963 and 1964. Woodcock courtship calls were counted at 2-min intervals, alternating each day between several areas of differing woodcock density. At the same time, cooperators made the standard Singing Ground Survey through the study area each evening. Climatic conditions were measured for each woodcock performance. The most stable courtship activity occurred from about April 15 to May 15 and appeared to be affected only by extremes in climatic conditions. The performance seemed to be initiated by light intensities averaging 2.1 footcandles, so that starting times were earlier in relation to official sunset when the cloud cover was heavier. Male activity increased briefly with the coincident appearance of many broods. As the density of performing males increased, the level of peenting activity per bird significantly decreased; courtship flight activity was less affected. As density increased, the probability of hearing individual males was reduced. The predawn performance was deemed unsuitable for surveys. Poor hearing ability of survey cooperators lowered the survey results significantly. The inclusion of flight songs was not detrimental to the daily tally, nor was the survey significantly affected by stage of the moon. Recommendations for singing ground survey changes are presented.

Ehrhardt, Warren R., R. Harkema, and G. C. Miller. TREMATODES FROM TWO SPECIES OF GULLS FROM NORTH CAROLINA. J. Elisha Mitchell Sci. Soc. 82(2): 208-212. Nov. 1966. WR 124: 59

[N.C. State Univ., Raleigh.] Ninety-nine per cent of the 118 gulls collected were infected with trematodes representing 21 species.--From summ.

Goudy, William H., and Fant W. Martin. WOODCOCK STATUS REPORT, 1965. US F&WS, Spec. Sci. Rept.--Wildl. no. 92. iv + 43 p., 1 fig. Feb. 1966. WR 124: 59

[Migratory Bird Populations Sta., Laurel, Md.] Singing-ground surveys of American woodcock indicate that breeding populations have increased gradually over the past 7 years while production, as indicated by wing-collection surveys, has remained relatively stable. The woodcock harvest, meanwhile, has probably more than doubled during the past decade. This suggests that while woodcock are probably becoming more important to North American sportsmen, hunting mortality is still relatively unimportant.--From abstr.

Jenni, Donald Alison. THE BREEDING ECOLOGY OF FOUR SPECIES OF HERONS AT LAKE ALICE, ALACHUA COUNTY, FLORIDA. Ph.D. thesis, Univ. Fla. 122 p. 1961. [From Dissertation Abstr. 24(10), 1964.] WR 124: 59

Kahl, Marvin Philip. FOOD ECOLOGY OF THE WOOD STORK IN FLORIDA: A STUDY OF BEHAVIORAL AND PSYSIOLOGICAL ADAPTATIONS TO SEASONAL DROUGHT. Ph.D. thesis, Univ. Ga. 118 p. 1963. [From Dissertation Abstr. 24(6), 1963.] WR 124: 60

"Mycteria americana." See WR 107: 61, WR 113: 70, WR 114: 49, and WR 122: 69.

Lebedeva, M. I. [MIGRATION OF WADING BIRDS ACCORDING TO BANDING RECORDS.] Ornitologiya 7: 328-340. 1965. [From Ibis 108(2), 1966. In Russian.] WR 124: 60

Migration routes of 11 spp. of plovers of the USSR are discussed, maps presented and some general conclusions drawn regarding the entire family.

Moyle, Peter. FEEDING BEHAVIOR OF THE GLAUCOUS-WINGED GULL ON AN ALASKAN SALMON STREAM. Wilson Bull. 78(2): 175-190, 4 figs. June 1966. WR 124: 60

[Univ. Minn., Minneapolis.] Glaucous-winged gulls (Larus glaucescens) fed in two distinct situations: on the banks of the stream on salmon carcasses pulled out of the water by bears and in the water on salmon eggs drifting with the current. Fish carcasses were defended by hungry gulls, but the attacking gull more often won than the defender in disputes over carcasses. Gulls preferred female carcasses of salmon as compared with male carcasses. Immature birds usually could not defend a carcass against attack by adults.--From summ. Courtesy/ Paul A. Stewart.

Novakowski, N. S. WHOOPING CRANE POPULATION DYNAMICS ON THE NESTING GROUNDS, WOOD BUFFALO NATIONAL PARK, NORTHWEST TERRITORIES, CANADA. Canadian Wildl. Serv. Rept. Ser.--no. 1. 20 p., 14 figs. 1966. 50¢. WR 124: 60

The wild population [of Grus americana] which now numbers 38 birds (September 1966), winters in the Aransas Refuge in Texas and migrates each spring to breeding grounds in northern Canada. The largest known breeding population is found in the Sass River area of the Northwest Territories section of Wood Buffalo National Park. The Sass River birds have produced 32 young between 1954 and 1965 and the production from other breeding areas in this period was 29 young, yet the adult population has increased by only 11 birds. It is postulated that the juvenile birds are more subject to mortality than the adults, and as a result the total population remains fairly static. This high mortality seems to occur the year following a successful breeding season, and so long as this mortality cannot be reduced the whooping crane has little hope of reaching population levels at which it would be out of danger.--From abstr.

Oring, Lewis W., and W. Marvin Davis. SHOREBIRD MIGRATION AT NORMAN, OKLAHOMA: 1961-63. Wilson Bull. 78(2): 166-174. June 1966. WR 124: 60

[Univ. Okla., Norman.] Observations on abundance of 30 spp. in spring and fall migrations during 1961-63.--Courtesy/ Paul A. Stewart.

Recher, Harry F. SOME ASPECTS OF THE ECOLOGY OF MIGRANT SHOREBIRDS. Ecology 47(3): 393-407, 5 figs. Late Spring 1966. WR 124: 60

[Univ. Pa., Philadelphia.] There seems to be a staggering of peak populations of migrating shorebirds, which may be an adaptation to avoid competition for food resources.--Courtesy/ Paul A. Stewart.

Uys, J. M. C., and T. H. Clutton-Brock. THE BREEDING OF THE RUFOUS-BELLIED HERON (BUTORIDES RUFIVENTRIS) IN ZAMBIA. Puku 4: 171-180, 5 pls. 1966. WR 124: 60

Wiens, John A. NOTES ON THE DISTRACTION DISPLAY OF THE VIRGINIA RAIL. Wilson Bull. 78(2): 229-231, 1 fig. June 1966. WR 124: 60

[Univ. Wis., Madison.] Distraction display of Rallus limicola is described and figured.--Courtesy/ Paul A. Stewart.

Belknap, John B. THE ROUGH-LEGGED HAWK IN NEW YORK STATE. Kingbird 16(3): 133-136, 2 figs. July 1966. WR 124: 61

[42 Clinton St., Gouverneur, N.Y.] Summarization of Christmas bird counts for 1947-1965 supplemented with 3 years of observations on spring migration in Jefferson County.

Cade, Tom J., and Lewis Greenwald. NASAL SALT SECRETION IN FALCONIFORM BIRDS. Condor 68(4): 338-350, 1 fig. July-Aug. 1966. WR 124: 61

[Syracuse Univ., Syracuse, N.Y.] Excretions from the nares of clear fluid contained concentrations of Na^+ and Cl^- always hypertonic to blood values. These excretions appeared when the birds were feeding. The accipitrid species voided the secretion by shaking their heads from side to side; the falcons sneezed out the secretions. Potassium ions were excreted mainly in the urine.--Courtesy/ Paul A. Stewart.

Chernjikin, E. M. [ON THE BIOLOGY OF THE PACIFIC WHITE-TAILED EAGLE.] Ornitologiya 7: 272-275. 1965. [From Ibis 108(2), 1966. In Russian.] WR 124: 61

"Haliaëtus pelagicus."

Fairley, J. S. ANALYSES OF BARN OWL PELLETS FROM AN IRISH ROOST. British Birds 59(8): 338-340. Aug. 1966. WR 124: 61

Summary: Pellets were collected from a roost of at least two barn owls Tyto alba in Co. Down, Northern Ireland, and analyzed for prey content. The owls lived mainly on wood mice Apodemus sylvaticus (51% by estimated weight) and brown rats Rattus norvegicus (30%) with smaller quantities of house mice Mus musculus (15%) and pygmy shrews (4%). Birds were rarely taken.

Grewe, Alfred H., Jr. SOME ASPECTS IN THE NATURAL HISTORY OF THE BALD EAGLE, HALIAEETUS LEUCOCEPHALUS, IN MINNESOTA AND SOUTH DAKOTA. Ph.D. thesis, Univ. S. Dak. 154 p. 1966. [From Dissertation Abstr. 27(4B), 1966.] WR 124: 61

Haneda, K., and M. Koizumi. [LIFE HISTORY OF THE BLACK-EARED KITE (MILVUS MIGRANS LINEATUS). I. BREEDING SEASON.] Japanese J. Ecol. 15: 199-208, 221-228. 1965. [From Auk 83(3), 1966. In Japanese with English summ.] WR 124: 61

Hepworth, J. Leland. AN ATTACK AND RIDING OF A RED-TAILED HAWK. Wilson Bull. 78(3): 318. Sept. 1966. WR 124: 61

[Okla. Coop. Wildl. Res. Unit, Stillwater.] A scissor-tailed flycatcher (Muscivora forficata) alighted on the back of a flying red-tailed hawk (Buteo jamaicensis) and rode down into the roadside vegetation.--Courtesy/ Paul A. Stewart.

Locke, Louis N., Nicholas J. Chura, and Paul A. Stewart. SPERMATOGENESIS IN BALD EAGLES EXPERIMENTALLY FED A DIET CONTAINING DDT. Condor 68(5): 497-502. Sept.-Oct. 1966. WR 124: 61

[Patuxent Wildl. Res. Center, Laurel, Md.] Summary: When bald eagles were fed DDT in the diet at the level of 10 ppm (dry weight basis) for periods of 60 and 120 days, there was no interference with spermatogenic activity. Degenerative testicular changes were produced only by levels of DDT that produced abnormal neurological signs and usually resulted in death. Histological examination of these testes indicates that bald eagles have a seasonal testicular cycle similar to that reported for many other birds of the Northern Hemisphere.--Courtesy/ Paul A. Stewart.

Nagell, B., and I. Frycklund. [THE IRRUPTION OF THE SNOWY OWL (NYCTEA SCANDIACA) IN SCANDINAVIA IN THE WINTERS OF 1960-1963 AND NOTES ON ITS BEHAVIOUR.] Vår Fågelvärld 24: 26-55. 1965. [From Ibis 108(2), 1966. In Swedish with English summ.] WR 124: 61

Pinto, O. [THE FRUIT OF THE PALM ELAEIS GUINEENSIS IN THE DIET OF CATHARTES AURA RUFICOLLIS.] Hornero 10: 276-277. 1965. [From Auk 83(3), 1966. In Portuguese.] WR 124: 62

In eastern Brazil the turkey vulture was observed regularly eating the ripe fruit of the introduced African oil palm, the same fruit on which the African palm-nut vulture (Gypohierax) mainly feeds. The black vulture (Coragyps ater) was reported by farmers also to eat this fruit.

Rogers, John P. MALLARD PREDATION BY A GOSHAWK. Wilson Bull. 78(3): 317-318. Sept. 1966. WR 124: 62

[Gaylord Mem. Lab., Puxico, Mo.] The goshawk (Accipiter gentilis) struck and carried away a mallard (Anas platyrhynchos).--Courtesy/ Paul A. Stewart.

Scharf, William C. ORNITHOICA VICINA (DIPTERA: HIPPOBOSCIDAE) A NEW HOST RECORD FROM THE MARSH HAWK. Auk 83(3): 471. July 1966. WR 124: 62

[Northwestern Mich. Coll., Traverse City.] The fly had previously been found on seven other Falconiformes but not on Circus cyaneus.--Courtesy/ Paul A. Stewart.

South, G. Robin. FOOD OF LONG-EARED OWLS IN SOUTH LANCASHIRE. British Birds 59(11): 493-497. Nov. 1966. WR 124: 62

"Asio otus."

Storer, Robert W. SEXUAL DIMORPHISM AND FOOD HABITS IN THREE NORTH AMERICAN ACCIPITERS. Auk 83(3): 423-436. July 1966. WR 124: 62

[Univ. Mich. Museum Zool., Ann Arbor.] "Accipiter striatus velox, A. cooperii and A. gentilis atricapillus." Presents some theoretical considerations on the relation of predator-prey sizes.--Courtesy/ Paul A. Stewart.

White, Clayton M., and Robert B. Weeden. HUNTING METHODS OF GYRFALCONS AND BEHAVIOR OF THEIR PREY (PTARMIGAN). Condor 68(5): 517-519. Sept.-Oct. 1966. WR 124: 62

[Univ. Kans., Lawrence.] Observations on Falco rusticolus, Lagopus mutus, and L. lagopus.--Courtesy/ Paul A. Stewart.

BLACKBIRDS, STARLINGS, CROWS

Blomgren, A. [NEST-SITES AND NESTS OF RAVENS (CORVUS CORAX) IN SWEDEN.] Zool. Revy 27: 78-83. 1965. [From Ibis 108(2), 1966. In Swedish.] WR 124: 62

Cabot, D. THE STATUS AND DISTRIBUTION OF THE CHOUGH PYRRHOCORAX PYRRHOCORAX (L.) IN IRELAND 1960-65. Irish Nat. J. 15: 95-100. 1965. [From Ibis 108(2), 1966.] WR 124: 62

Ellis, Charles R., Jr. AGONISTIC BEHAVIOR IN THE MALE STARLING. Wilson Bull. 78(2): 208-224, 7 figs. June 1966. WR 124: 62

[Pa. State Univ., University Park.] Twelve displays were recognized as having aggressive implications.--From summ. Courtesy/ Paul A. Stewart.

Fankhauser, Don P. MOVEMENTS OF STARLINGS IN RELATION TO A ROOST NEAR HANOVER, PENNSYLVANIA. Bird-Banding 37(3): 200-203. July 1966. WR 124: 62

[Patuxent Wildl. Res. Center, Laurel, Md.] Some starlings (Sturnus vulgaris) used the Hanover roost for more than one winter. Birds that left the roost were replaced by northward migrants as spring approached. Some starlings spent the following nesting season within 50 miles of the winter roost. There was no evidence of exchange between roosts during Jan.--Courtesy/ Paul A. Stewart.

Gwinner, E. BEOBACHTUNGEN ÜBER NESTBAU UND BRUTPFLEGE DES KOLKRABEN (CORVUS CORAX) IN GEFANGENSCHAFT. [OBSERVATIONS ON NEST BUILDING AND PARENTAL CARE OF THE RAVEN (CORVUS CORAX) IN CAPTIVITY.] J. Ornithol. Leipzig 106: 145-178. 1965. [From Ibis 108(2), 1966. In German.] WR 124: 62

Holcomb, Larry C. RED-WINGED BLACKBIRD NESTLING DEVELOPMENT. Wilson Bull. 78(3): 283-288. Sept. 1966. WR 124: 63
[Ohio State Agr. Res. & Development Center, Wooster.] Most nestlings were able to grasp by the eighth or ninth day. More than half of them could balance on the day that they could first grasp. When a hood was placed over the head of nestlings when first able to balance, they had difficulty in balancing but most of them could still balance. Ability of nestlings to grasp and balance may have a direct influence on age-specific mortality.--From abstr. Courtesy/ Paul A. Stewart.

Kuroda, N. THE COMPARATIVE ANALYSIS OF BREEDING RATES OF RURAL AND URBAN GREY STARLING COLONIES IN TOKYO AREA; THE SECOND REPORT (PART 1). Misc. Rept. Yamashina Inst. Orn. Zool. 4: 1-30. 1964. [From Ibis 108(2), 1966.] WR 124: 63
[Yamashina's Inst. Ornithol. & Zool., Shibuya, Tokyo, Japan.] "Sturnus cineraceus."

Meanley, Brooke. RED-WINGED BLACKBIRDS SEARCHING BENEATH PINE BARK FOR INSECTS IN WINTER. Auk 83(3): 480-481. July 1966. WR 124: 63
[Patuxent Wildl. Res. Center, Laurel, Md.] The birds removed the bark from branches of pine trees.--Courtesy/ Paul A. Stewart.

Orians, Gordon H. FOOD OF NESTLING YELLOW-HEADED BLACKBIRDS, CARIBOO PARKLANDS, BRITISH COLUMBIA. Condor 68(4): 321-337, 4 figs. July-Aug. 1966. WR 124: 63
[Univ. Wash., Seattle.] Food samples were collected by placing segments of pipe cleaners around the necks of nestlings to prevent swallowing of the food. Damselflies (Enallagma) were the most important item of food where these were available; elsehwere, Diptera were the most important food item.--Courtesy/ Paul A. Stewart.

Power, Dennis M. PARASITISM OF THE DWARF VIREO (VIREO NANUS) BY COWBIRDS. Auk 83(3): 476-477. July 1966. WR 124: 63
[Univ. Kans., Lawrence.] Several new records are reported.--Courtesy/ Paul A. Stewart.

Rolfe, Richard. THE STATUS OF THE CHOUGH IN THE BRITISH ISLES. Bird Study 13(3): 221-236. Sept. 1966. WR 124: 63
[Corpus Christi Coll., Oxford, England.] "Pyrrhocorax pyrrhocorax."
Summary: The present status of the chough is described, as revealed by the 1963 chough census. There are 98 breeding pairs in Wales, 11 in Scotland, and estimated totals of 20 in the Isle of Man and 567-682 in Ireland. There are also about 400 non-breeders. The decline of the chough in the last 150 years is reviewed and its causes discussed. No general cause is apparent, but attention is drawn to several possible factors: human persecution, predation, climatic change, disease and inbreeding, and toxic chemicals. In some areas there seems to have been a recent increase in population. Analyses are given of such data on clutch- and brood-size, nest-site, and flock-size, as were provided by the census returns. The chough's feeding habits are discussed, with special reference to unusual records relating to the 1962-63 winter.

OTHER BIRDS

Adamyan, M. S. [ECOLOGY OF THE ROCK NUTHATCH IN ARMENIA.] Ornitologiya 7: 157-165. 1965. [From Ibis 108(2), 1966. In Russian.] WR 124: 63
"Sitta neumayer rupicola."

Brooke, R. K. THE BAT-LIKE SPINETAIL CHAETURA BOEHMI SCHALOW (AVES). Arnoldia 29(2): 1-18, 1 map, 1 pl. 20 Aug. 1966. WR 124: 63
Taxonomy, geographical distribution and variation, ecology, breeding and molt of Chaetura boehmi are discussed.

Escalante, Rodolfo. NOTES ON THE URUGUAYAN POPULATION OF LARUS BELCHERI. Condor 68(5): 507-510, 1 fig. Sept.-Oct. 1966. WR 124: 64
[Montevideo, Uruguay.] Comments on winter habitat, food habits, plumages, measurements, and weights.--Courtesy/ Paul A. Stewart.

Hall, B. P., R. E. Moreau, and I. C. J. Galbraith. POLYMORPHISM AND PARALLELISM IN THE AFRICAN BUSH-SHRIKES OF THE GENUS MALACONOTUS (INCLUDING CHLOROPHONEUS). Ibis 108(2): 161-182, 3 figs. + 1 pl. Apr. 1966. WR 124: 64
[British Museum (Nat. Hist.), London, England.]

Mitchell, B. L. ORIENTATION OF NESTS OF THE WHITE-BROWED SPARROW-WEAVER. Puku 4: 167-170, 1 fig. 1966. WR 124: 64

Morse, Douglass H. NOTES ON THE WREN-THRUSH. Condor 68(5): 520-521. Sept.-Oct. 1966. WR 124: 64
[Univ. Md., College Park.] Observations on ecology and behavior of Zeledonia coronata.--Courtesy/ Paul A. Stewart.

Navas, J. R. NOTAS SOBRE AIMOPHILLA STRIGICEPS Y SU DISTRIBUCION GEOGRAFICA. [NOTES ON AIMOPHILLA STRIGICEPS AND ITS GEOGRAPHICAL DISTRIBUTION.] Hornero 10: 215-224. 1965. [From Auk 83(3), 1966. In Spanish with English summ.] WR 124: 64

Power, Harry W., III. BIOLOGY OF THE MOUNTAIN BLUEBIRD IN MONTANA. Condor 68(4): 351-371, 1 fig. July-Aug. 1966. WR 124: 64
[Univ. Mont., Missoula.] The following were discussed: spring migration, song, territory, territorial defense, pair relations, nest site, eggs, incubation, hatching, nestling period, fledgling period, postfledging period, second broods, banding returns, nesting success, autumn flocking, autumn migration, foraging, bathing, predators and competitors.--Courtesy/ Paul A. Stewart.

Rooth, Jan. THE FLAMINGOS ON BONAIRE (NETHERLANDS ANTILLES). HABITAT, DIET AND REPRODUCTION OF PHOENICOPTERUS RUBER RUBER. Natuurwetenschappelijke Studiekring voor Suriname en de Nederlandse Antillen (Utrecht) no. 41. p. 1-151, 48 figs. + 20 pls. Dec. 1965. WR 124: 64
With chapters on the distribution and decrease, habitat and habitat selection, diet, reproduction, numbers and migrational movements, regulation of numbers, and protection of the West Indian flamingo.

Skutch, Alexander F. LIFE HISTORY NOTES ON THREE TROPICAL AMERICAN CUCKOOS. Wilson Bull. 78(2): 139-165. June 1966. WR 124: 64
[El Quizarrá, San Isidro del General, Costa Rica.] Observations on the squirrel cuckoo (Piaya cayana), lesser ground-cuckoo (Morococcyx erythropygus) and smooth-billed ani (Crotophaga ani).--Courtesy/ Paul A. Stewart.

Snow, D. W., and B. K. Snow.' THE BREEDING SEASON OF THE MADEIRAN STORM PETREL OCEANODROMA CASTRO IN THE GALAPAGOS. Ibis 108(2): 283-284. Apr. 1966. WR 124: 64
[British Trust for Ornithol., Beech Grove, Tring, Hertfordshire, England.]

Thompson, Max C., John Q. Hines, and Francis S. L. Williamson. DISCOVERY OF THE DOWNY YOUNG OF KETTLITZ'S MURRELET. Auk 83(3): 349-351 + 1 pl. July 1966. WR 124: 64
[Box 213, Udall, Kans.] Found on Angmakrog Mountain, near Cape Thompson, Alaska.--Courtesy/ Paul A. Stewart.

Verner, Jared. ASPECTS OF THE ECOLOGY AND EVOLUTION OF THE LONG-BILLED MARSH WREN. Ph.D. thesis, Univ. Wash. 175 p. 1963. [From Dissertation Abstr. 24(7), 1964.] WR 124: 64
"Telmatodytes palustris."

OTHER BIRDS--Continued

Walley, Harlan D. THE CAROLINA PARAKEET IN ILLINOIS. Wilson Bull. 78(2): 231-232. June 1966. WR 124: 65
[717 N. Elm St., Sandwich, Ill.] The Carolina parakeet (Conuropsis carolinensis) was present in the Illinois River Valley until 1880.--Courtesy/ Paul A. Stewart.

REPTILES & AMPHIBIANS

Alcala, Angel Chua. POPULATIONS OF THREE TROPICAL LIZARDS ON NEGROS ISLAND, PHILIPPINES. Ph.D. thesis, Stanford Univ. 319 p. 1966. [From Dissertation Abstr. 27(4B), 1966.] WR 124: 65
"Dasia smaragdina philippinica, Mabuya multifasciata, and Draco volans."

Bowers, J. Hoyt. FOOD HABITS OF THE DIAMOND-BACKED WATER SNAKE, NATRIX RHOMBIFERA RHOMBIFERA, IN BOWIE AND RED RIVER COUNTIES, TEXAS. Herpetologica 22(3): 225-229. 10 Sept. 1966. WR 124: 65
[Wayland Baptist Coll., Plainview, Texas.]

Brooks, Garnett R., Jr. FOOD HABITS OF THE GROUND SKINK. Quart. J. Fla. Acad. Sci. 26(4): 361-367. 1963. [From Biol. Abstr. 47(11), 1966.] WR 124: 65
[Coll. William & Mary, Williamsburg, Va.] "Lygosoma laterale."

Clarke, Robert Francis. AN ETHOLOGICAL STUDY OF THE IGUANID LIZARD GENERA CALLISAURUS, COPHOSAURUS AND HOLBROOKIA. Ph.D. thesis, Univ. Okla. 144 p. 1963. [From Dissertation Abstr. 24(8), 1964.] WR 124: 65

Cuellar, Orlando. DELAYED FERTILIZATION IN THE LIZARD UTA STANSBURIANA. Copeia 1966(3): 549-552. 7 Sept. 1966. WR 124: 65
[Univ. Colo., Boulder.] Abstract: Thirty female Uta stansburiana with oviducal eggs were selected from the field and isolated from males in the laboratory. Three separate clutches of eggs were laid during a three-month period. Of 68 eggs laid from the first clutch 95% were fertile. Five females, sacrificed after laying the first clutch about one month after capture, had sperm in the seminal receptables. Of 24 eggs recovered from the second clutch 53% were fertile and indicated that sperm may remain functional for the fertilization of eggs for at least 81 days. No eggs were fertile in the third clutch. Stored sperm appear to increase the reproductive potential of the Uta stansburiana population.

Dawson, William R., Vaughan H. Shoemaker, and Paul Licht. EVAPORATIVE WATER LOSSES OF SOME SMALL AUSTRALIAN LIZARDS. Ecology 47(4): 589-594, 1 fig. Summer 1966. WR 124: 65
[Univ. Mich., Ann Arbor.] Studies on Amphibolurus ornatus, Sphenomorphus labillardieri, and Gehyra variegata.--Courtesy/ Paul A. Stewart.

Duellman, William E. AGGRESSIVE BEHAVIOR IN DENDROBATID FROGS. Herpetologica 22(3): 217-221, 2 figs. 10 Sept. 1966. WR 124: 65
[Univ. Kans., Lawrence.]

Ferguson, Gary W. EFFECT OF FOLLICLE-STIMULATING HORMONE AND TESTOSTERONE PROPIONATE ON THE REPRODUCTION OF THE SIDE BLOTCHED LIZARD, UTA STANSBURIANA. Copeia 1966(3): 495-498. 7 Sept. 1966. WR 124: 65
[Univ. Mich., Ann Arbor.] Abstract: Testosterone propionate was effective in producing courtship behavior in male Uta outside of the normal breeding season. Similarly, follicle-stimulating hormone significantly increased receptive behavior of females. Serial injections of FSH promote rapid follicular development and FSH appears necessary to prevent atresia of large follicles.

Fleharty, Eugene Dale. COMPARATIVE ECOLOGY OF THREE SPECIES OF NEW MEXICAN GARTER SNAKES (GENUS THAMNOPHIS). Ph.D. thesis, Univ. N. Mex. 75 p. 1963. [From Dissertation Abstr. 24(8), 1964.] WR 124: 66

Fowler, James A. A COMMUNAL NESTING SITE FOR THE SMOOTH GREEN SNAKE IN MICHIGAN. Herpetologica 22(3): 231. 10 Sept. 1966. WR 124: 66
[Henry Ford Museum, Dearborn, Mich.] "Opheodrys v. vernalis."

Gans, Carl, and H. I. Rosenberg. NUMERICAL ANALYSIS OF FROG JUMPING. Herpetologica 22(3): 209-213, 2 figs. 10 Sept. 1966. WR 124: 66
[State Univ. N.Y. at Buffalo, Buffalo.]

Griffith, Susan Jane. DISPLAY VARIATION AND BEHAVIOR ASSOCIATED WITH DOMINANCE IN TWO SUBSPECIES OF SCELOPORUS UNDULATUS--IGUANIDAE. Ph.D. thesis, Univ. Okla. 38 p. 1966. [From Dissertation Abstr. 27(4B), 1966.] WR 124: 66

Hadfield, Sydney. OBSERVATIONS ON BODY TEMPERATURE AND ACTIVITY IN THE TOAD BUFO WOODHOUSEI FOWLERI. Copeia 1966(3): 581-582, 2 figs. 7 Sept. 1966. WR 124: 66

Hansen, Keith L. THE BURROW OF THE GOPHER TORTOISE. Quart. J. Fla. Acad. Sci. 26(4): 353-360. 1963. [From Biol. Abstr. 47(11), 1966.] WR 124: 66
[Stetson Univ., DeLand, Fla.] "Gopherus polyphemus."

Jameson, David L. RATE OF WEIGHT LOSS OF TREE FROGS AT VARIOUS TEMPERATURES AND HUMIDITIES. Ecology 47(4): 605-613, 6 figs. Summer 1966. WR 124: 66
[San Diego State Coll., San Diego, Calif.] The rate of weight loss was significantly higher at high temperatures than at low temperatures and increased logarithmically with temperature.--From abstr. Courtesy/ Paul A. Stewart.

Johnson, Donald R. DIET AND ESTIMATED ENERGY ASSIMILATION OF THREE COLORADO LIZARDS. Am. Midland Nat. 76(2): 504-509. Oct. 1966. WR 124: 66
[Minot State Coll., Minot, N. Dak.] "Sceloporus undulatus, S. magister, and Cnemidophorus tigris."

Kochva, Elazar, and Carl Gans. HISTOLOGY AND HISTOCHEMISTRY OF VENOM GLANDS OF SOME CROTALINE SNAKES. Copeia 1966(3): 506-515, 3 figs. 7 Sept. 1966. WR 124: 66
[State Univ. N.Y. at Buffalo, Buffalo.]

Laughlin, Harold Emerson. A STUDY OF THE INTERRELATIONSHIPS IN NATURAL POPULATIONS OF SEVERAL SPECIES OF LIZARDS. Ph.D. thesis, Univ. Texas. 259 p. 1966. [From Dissertation Abstr. 27(2B), 1966.] WR 124: 66
Ecological interrelationships were studied among 8 sympatric lizard populations in southern Texas. Niches were delineated as clearly as possible and niche overlaps were evaluated. Sceloporus variabilis, S. olivaceus and S. undulatus were found mostly in woodlands, usually on trees or logs, with slight variation among species. In summer S. undulatus females moved into sandhills to lay eggs. Phrynosoma cornutum was found in clay soil brushlands and sandhills, on open ground. Ophisaurus attenuatus was terrestrial, in densely vegetated habitats. Cnemidophorus gularis was found in most vegetation associations, on open ground. C. sexlineatus was found on sandy soils among sparse vegetation. Lygosoma laterale was found in woodlands, under logs.

Maslin, T. Paul. THE SEX OF HATCHLINGS OF FIVE APPARENTLY UNISEXUAL SPECIES OF WHIPTAIL LIZARDS (CNEMIDOPHORUS, TEIIDAE). Am. Midland Nat. 76(2): 369-378. Oct. 1966. WR 124: 66
[Univ. Colo. Museum, Boulder.] Abstract: Eggs of C. exsanguis, perplexus, tesselatus, and velox were harvested from field-caught lizards and incubated. All the hatchlings are females. Supplementary evidence from exclusively female hatchlings of these forms and C. cozumelus, collected in areas where no other teiid lizards occur, supports the hypothesis that these species are parthenogenetic.

Mount, Robert Hughes. THE NATURAL HISTORY OF THE RED-TAILED SKINK, EUMECES EGREGIUS BAIRD. Ph.D. thesis, Univ. Fla. 94 p. 1961. [From Dissertation Abstr. 24(5), 1963.] WR 124: 67
See WR 112: 68.

Murphy, Ted Daniel. AMPHIBIAN POPULATIONS AND MOVEMENTS AT A SMALL SEMI-PERMANENT POND IN ORANGE COUNTY, NORTH CAROLINA. Ph.D. thesis, Duke Univ. 129 p. 1963. [From Dissertation Abstr. 24(3), 1963.] WR 124: 67

Myers, Charles W., and Sam R. Telford, Jr. FOOD OF NEOSEPS, THE FLORIDA SAND SKINK. Quart. J. Fla. Acad. Sci. 28(2): 190-194. 1965. [From Biol. Abstr. 47(11), 1966.] WR 124: 67
[Inst. Infectious Disease, Univ. Tokyo, Tokyo, Japan.]

Neill, Wilfred T. FROGS INTRODUCED ON ISLANDS. Quart. J. Fla. Acad. Sci. 27(2): 127-130. 1964. [From Biol. Abstr. 47(11), 1966.] WR 124: 67
[122 Homecrest Rd., New Port Richey, Fla.] Rana grylio introduced on New Providence Island, Bahamas; R. catesbeiana on Cuba; Hyla a. aurea on New Caledonia; Xenopus l. laevis on Ascension Island.

Neill, Wilfred T. ISOLATING MECHANISMS IN SNAKES. Quart. J. Fla. Acad. Sci. 27(4): 333-347. 1964. [From Biol. Abstr. 47(11), 1966.] WR 124: 67
[122 Homecrest Rd., New Port Richey, Fla.]

Nelson, William Frank. NATURAL HISTORY OF THE NORTHERN PRAIRIE SKINK EUMECES SEPTENTRIONALIS SEPTENTRIONALIS (BAIRD). Ph.D. thesis, Univ. Minn. 138 p. 1963. [From Dissertation Abstr. 24(11), 1964.] WR 124: 67

Pianka, Eric Rodger. SPECIES DIVERSITY AND ECOLOGY OF FLATLAND DESERT LIZARDS IN WESTERN NORTH AMERICA. Ph.D. thesis, Univ. Wash. 225 p. 1965. [From Dissertation Abstr. 27(1B), 1966.] WR 124: 67

Rand, A. Stanley, and Patricia J. Rand. THE RELATION OF SIZE AND DISTANCE JUMPED IN BUFO MARINUS. Herpetologica 22(3): 206-209, 2 figs. 10 Sept. 1966. WR 124: 67
[Smithsonian Tropical Res. Inst., Box 2072, Balboa, Canal Zone.] "One toad twice as large as another weighs about eight times as much, has hind legs twice as long and jumps twice as far."

Regal, Philip J. THERMOPHILIC RESPONSE FOLLOWING FEEDING IN CERTAIN REPTILES. Copeia 1966(3): 588-590. 7 Sept. 1966. WR 124: 67
[Univ. Calif., Los Angeles.]

Rose, Francis L. REPRODUCTIVE POTENTIAL OF AMPHIUMA MEANS. Copeia 1966 (3): 598-599, 1 fig. 7 Sept. 1966. WR 124: 67
[Fla. State Museum, Gainesville.]

Schiotz, Arne. A PRELIMINARY LIST OF AMPHIBIANS COLLECTED IN GHANA. Vidensk. Medd. Dansk Naturhist. Foren. Kobenhavn 127: 1-17, illus. 1964. [From Biol. Abstr. 47(14), 1966.] WR 124: 67
[Danmarks Akvarium, Charlottenlund, Denmark.]

Schiotz, Arne. A PRELIMINARY LIST OF AMPHIBIANS COLLECTED IN SIERRA LEONE. Vidensk. Medd. Dansk Naturhist. Foren. Kobenhavn 127: 19-33, illus. 1964. [From Biol. Abstr. 47(14), 1966.] WR 124: 67
[Danmarks Akvarium, Charlottenlund, Denmark.]

Schmid, William Dale. SOME ASPECTS OF WATER ECONOMIES OF NINE SPECIES OF ANURAN AMPHIBIANS. Ph.D. thesis, Univ. Minn. 68 p. 1962. [From Dissertation Abstr. 24(1), 1963.] WR 124: 67
"Rana septentrionalis, R. clamitans, R. pipiens, R. sylvatica, Hyla versicolor, H. crucifer, Pseudacris nigrita, Bufo americanus, B. hemiophrys."
See WR 115: 64 and WR 118: 68.

Shaw, Charles E. THE EGGS AND YOUNG OF THE MARINE IGUANA (AMBLYRHYNCHUS CRISTATUS). Copeia 1966(3): 585. 7 Sept. 1966. WR 124: 68
[Zool. Soc. San Diego, San Diego, Calif.]

Shoop, Clarence Robert. A COMPARATIVE STUDY OF LOUISIANA NECTURUS POPULATIONS. Ph.D. thesis, Tulane Univ. 126 p. 1963. [From Dissertation Abstr. 24(8), 1964.] WR 124: 68
See WR 120: 95.

Uzzell, Thomas Marshall. MORPHOLOGY AND BIOLOGY OF THE SALAMANDERS OF THE AMBYSTOMA JEFFERSONIANUM COMPLEX. Ph.D. thesis, Univ. Mich. 179 p. 1962. [From Dissertation Abstr. 23(8), 1963.] WR 124: 68

Voris, Harold K., and James P. Bacon, Jr. DIFFERENTIAL PREDATION ON TADPOLES. Copeia 1966(3): 594-598, 2 figs. 7 Sept. 1966. WR 124: 68
[Univ. Chicago, Chicago, Ill.] Under laboratory conditions a potential natural predator ate significantly fewer Bufo tadpoles than Pseudacris tadpoles.

Whitford, Walter G., and Allen Vinegar. HOMING, SURVIVORSHIP, AND OVERWINTERING OF LARVAE IN SPOTTED SALAMANDERS, AMBYSTOMA MACULATUM. Copeia 1966(3): 515-519, 3 figs. 7 Sept. 1966. WR 124: 68
[N. Mex. State Univ., University Park.] Abstract: Seventy-six per cent of the marked salamanders in a breeding population of Ambystoma maculatum returned to the same breeding ponds two years after the initiation of the study. Of the salamanders marked during the first year, 89.5% were alive the next year. There were 3.5 males per female in the breeding population. Individuals removed from the ponds successfully oriented and returned to the breeding site from a distance of 420 ft. Overwintering of larvae in the breeding ponds was attributed to low water temperatures during the summer months.

Wilder, Cleo Duke, Jr. DOMINANCE-SUBORDINANCE RELATIONSHIPS IN THE SOUTHEASTERN FIVE-LINED SKINK, EUMECES INEXPECTATUS TAYLOR. Ph.D. thesis, Univ. Fla. 113 p. 1962. [From Dissertation Abstr. 23(8), 1963.] WR 124: 68

Zenisek, Cyril James. A STUDY OF THE NATURAL HISTORY AND ECOLOGY OF THE LEOPARD FROG, RANA PIPIENS SCHREBER. Ph.D. thesis, Ohio State Univ. 161 p. 1963. [From Dissertation Abstr. 24(7), 1964.] WR 124: 68

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